U.S. Department of the Interior
Bureau of Land Management
Black Rock Field Office

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Jackson Mountains Wild Horse Gather

Preliminary Environmental Assessment

It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

[**BLM/NV/WN/EA/21-3+1792**]

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Chapter 1 Introduction

This Environmental Assessment (EA) has been prepared to analyze the Bureau of Land Management's (BLM) Black Rock Field Office (BRFO) proposal to gather and remove excess wild horses and burros from within and outside the Jackson Mountains Herd Management Area (HMA).

The wild horse and burro gather plan would allow for an initial gather and follow-up maintenance gathers to be conducted over 10 years following the date of the initial gather operation, to achieve and maintain appropriate management levels and continue applying population growth suppression methods. This EA will assist the BLM BRFO in project planning and ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any significant effects could result from the analyzed actions. Following the requirements of NEPA (40 CFR 1508.9 (a)), this EA describes the potential impacts of a No Action Alternative and the Proposed Action for the Jackson Mountains HMA. If the BLM determines that the Proposed Action for the HMA is not expected to have significant impacts a Finding of No Significant Impact (FONSI) would be issued and a Decision Record would be prepared. If Significant effects are anticipated, the BLM would prepare an Environmental Impact Statement.

This document is tiered to the *Winnemucca District Resource Management Plan/Final Environmental Impact Statement* (RMP) May 2015; *Black Rock Desert-High Rock Canyon Emigrant Trails National Conservation Area (NCA) and Associated Wilderness, and other Contiguous Lands in Nevada Resource Management Plan* (BRRMP), July 2004; and the *Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment*, (GRSG Plan Amendment) September 2015 and March 2019.

This EA has been developed in accordance with the revised Council on Environmental Quality (CEQ) National Environmental Policy Act (NEPA) regulations effective September 14, 2020.

1.1 Background

Since the passage of the Wild Free-Roaming Horses and Burros Act (WFRHBA) of 1971, BLM has refined its understanding of how to manage wild horse population levels. By law, BLM is required to control any overpopulation, by removing excess animals, once a determination has been made that excess animals are present and removal is necessary. Wild Horse and Burro (WHB) program goals have always been to establish and maintain a "thriving natural ecological balance" (TNEB) which requires identifying the Appropriate Management Level (AML) for individual herds. The AML is defined as the number of wild horses and burros that can be sustained within a designated HMA which achieves and maintains a TNEB in keeping with the multiple-use management concept for the areas[1]. In the past two decades, WHB program goals

1 The Interior Board of Land Appeals (IBLA) defined the goal for managing wild horses (or burro) population in a thriving natural ecological balance as follows: "As the court stated in Dahl vs Clark supra at 594, the 'benckmark test' for determining the

have also explicitly included conducting gathers, applying contraceptive treatments to reduce total population growth rates and increase the time between gathers necessary to remove excess animals, so as to manage for healthy wild horse and wild burro populations, and healthy rangelands by achieving and maintaining populations within the established AML. The use of fertility control methods helps reduce total wild horse population growth rates in the short term, and increases gather intervals and the number of excess horses that must be removed from the range. Other management efforts include conducting accurate population inventories and collecting genetic diversity monitoring data to support population-level genetic health assessments.

Population controls, such as the use of fertility control vaccines, intrauterine devices, or permanent sterilization, help control the populations of wild horses and burros in the HMAs. However, if used as the sole approach to controlling population numbers, population controls would not allow BLM to achieve population objectives in the foreseeable future (e.g. Fonner and Bohara 2017). In conjunction with other techniques (e.g. removals of excess animals and adoption/sale), fertility control can be a useful tool in a larger, more adaptive approach to wild horse and burro management.

Since 1989, approximately 3,400 wild horses have been gathered and removed from the Jackson Mountains HMA, with AML gathers in 1989, 1994, 1997. Since 2003, gathers have been conducted to remove wild horses from public and private lands as emergency actions, required due to what was, at each time, a lack of adequate resources to support a healthy wild horse population. BLM's management of wild horses and burros must also be consistent with Standards and Guidelines for Rangeland Health and for Healthy Wild Horse Populations developed by the Sierra Front-North West Great Basin Resource Advisory Council (RAC) and the BLM's Comprehensive Animal Welfare Program (BLM 2021).

Wild horses would be gathered from within and outside the HMA boundaries as displayed in Appendix M Map 1. Due to the overpopulation and lack of forage/water resources within the HMA wild horses have moved outside of the HMA in search of critical habiat resources such as forage, water and space.

The Jackson Mountains HMA is located northwest of Winnemucca, Nevada, and southeast of Denio, Nevada, within Humboldt County. Table 1 shows the size of the HMA, its AML, current estimated herd size, and the number of excess animals that would need to be removed to return to AML at this time.

suitable number of wild horses on the public range is "thriving natural ecological balance.' In the words of the conference committee which adopted this standard: 'The goal of WH&B management should be to maintain a thriving ecological balance (TNEB) between WH&B populations, wildlife, livestock and vegetation, and to protect the range from the deterioration associated with overpopulation of wild horses and burros.'"

Table 1 Herd Management Area, Acres, AML, Estimated Population as of July 2021

Herd	Total Acres	Appropriate Management Level	Estimated Population Including Foals born in 2021	Excess WHB to be Removed
Jackson Mountains HMA	264,974	130-217	1,018	801-888

The AML range was established through prior decision-making processes and re-affirmed through the Record of Decision (ROD) and RMP (2015).The AML range in Table 1 was established at a level that would maintain healthy wild horses and rangelands over the long-term based on monitoring data collected over time as well as an in-depth analysis of habitat suitability.

The HMA was surveyed in June 2020, and the inventory was conducted using the simultaneous double observer method, in which observers in an aircraft independently detect groups of wild horses (Griffin et al. 2020). These methods were developed by scientists with expertise in wildlife survey and analysis, as recommended by the NAS (2013). Sighting rates are estimated by comparing sighting records of the observers. Sighting probabilities for the observers are then computed from the information collected, and the overall population size is estimated. Flight inventories traditionally take place every 2 to 3 years.

The total estimated population of wild horses is 1,018 as of July 1, 2021. This number is based on the statistical analysis of data from the June 2020 wild horse population survey (Lubow 2020) and projected growth since that time. Current population estimates reflect the assumption that wild horse herds in this area increase 20% per year, which is consistent with published rates (NAS 2013, Ransom et al. 2016). The current population is over 4.7 times over the upper limit of AML.

Rangeland resources and wild horse health have been and are currently being affected by overpopulated wild horse herds. Monitoring data has been collected after the majority of livestock have been removed from the allotment for the past 5 years (2016-2020). In general, monitoring at the end of the livestock grazing period shows mainly slight to light use across most areas (with moderate or heavy use on one or two key areas). The results of key species utilization monitoring after the livestock grazing period ends and prior to re-entry of livestock on the allotment reveal severe to heavy use throughout the HMA (attributed mainly to wild horses), including areas outside the HMA boundary (40% of Key Areas) and in areas where there has been no cattle grazing. Few key areas (< 20%) had light to slight use. Livestock grazing has not occurred in some of these areas due to the over utilization of key species, attributed to wild horses, within the use area.

Wild horse herd health is currently being impacted due to excess wild horses on the rangeland. Wild horses have been document in body condition score of 2 (very thin) to 5 (moderate). Due to the severe and heavy use documented throughout the HMA wild horses have to travel further away from water sources for forage. Large groups of wild horses are also permanently residing

outside HMA boundaries in search of forage and water. Some groups also reside around and on private property, and near Jungo Rd., Sulpher-Jackson Rd, and Bottle Creek Rd. causing public safety concern for members of the public and motorists along the county roads.

Based upon all information available at this time, the BLM has determined that approximately 801 excess wild horses reside within the HMA and would need to be removed, in order to achieve the high end of the established AML, restore a thriving natural ecological balance (TNEB) and prevent further degradation of rangeland resources resulting from the current overpopulation of wild horses. Approximately 888 wild horses would need to be removed to achieve the low end of AML.

1.2 Purpose and Need

The purpose of the BLM's action is to reduce wild horse population growth rates, and to achieve and maintain wild horse population sizes within established AML ranges.

The need for the action is to prevent undue or unnecessary degradation of the public lands associated with excess wild horses, and to restore a TNEB and multiple-use relationship on the public lands, consistent with the provisions of Section 1333 (b) of the 1971 Wild Free-Roaming Horses and Burros Act (WFRHBA).

1.3 Land Use Plan Conformance and Consistency with Other Authorities

The alternatives described are in conformance with the *Black Rock Desert-High Rock Canyon Emigrant Trails National Conservation Area (NCA) and Associated Wilderness, and other Contiguous Lands in Nevada Resource Management Plan* (BRRMP), July 2004; the *Winnemucca District Resource Management Plan* (WDRMP), May 2015; and the *Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment,* (GRSG Plan Amendment) September 2015 and March 2019. The Objective, Goals, and Actions can be found in Appendix J.

WDRMP:

> Objective WHB 1: Administer HMAs to support healthy populations and achieve land health standards for WHB where a TNEB and multiple-use relationship can be achieved and maintained.
>
> Objective WHB 5.1: Maintain Appropriate Management Levels within HMAs.
>
> Action WHB 5.2: Gather excess WHB to low or mid AML level when populations meet or exceed the upper AML level and monitoring data supports that excess animals are present and need to be removed. All WHB residing within HAs and outside of HMAs will be removed during any population management action.
>
> Action WHB 5.3: Use fertility control (e.g., PZP, SpayVac, GonaCon, or other approved agents) to slow population growth rates to maintain a four-year gather cycle at minimum (longer cycles preferred).

Action WHB 5.4:

(1) Allow for the use of non-reproductive animals, in part or whole, for population management of HMAs within the WD. Depending on the population growth suppression (PGS) method that is used per the specific HMA, the percentage of the non-reproductive animals within the managed herd may vary between HMAs.

Criteria for considering a HMA as a non-reproducing population:

• HMAs where the population that is targeted as being non-reproducing is separated from a neighboring HMA's reproductive population by topography, existing fences, or other features and there is no interaction between the non-reproducing and the reproducing populations. This may include HMAs that are geographically isolated from other HMAs.

• HMAs with high AML set at or below 150.

• HMA has limited potential for genetic exchange with surrounding populations.

Criteria for managing a portion of a HMA's or HMA complex's population as non-reproducing:

• HMAs where the population that is targeted as being non-reproducing does not interact with the reproducing population within a single HMA or HMA complex due to topography, existing fences, or other features causing separation and the non-reproducing population has limited potential for genetic exchange.

• Any HMA with low AML greater than 100 head.

• HMAs where gather efficiencies have been consistently below 80 percent. (Fertility control requires 80 percent gather efficiency to be effective).

(2) Manage the Tobin Range HMA as a totally non-reproducing herd.

BRRMP:

WHB-5: Horses and burros will be gathered from the HMAs to maintain horses and burros within the AML as funding permits. Aircraft will continue to be used for the management of, and when necessary, removal of wild horses and burros. Gather activities will be scheduled to avoid high visitor use periods whenever possible.

WHB-6: Gathers in Wilderness will continue to be conducted by herding the animals by helicopter or on horseback to temporary corrals, generally located outside of Wilderness. No landing of aircraft will occur in Wilderness Areas except for emergency purposes, and no motorized vehicles will be used in Wilderness in association with the gather operations unless such use was consistent with the minimum tool requirement for management of Wilderness.

GRSG Approved Resource Management Plan Amendment (2015)

1.6.2 Improving Habitat Condition

In addition to prescribing land use allocations and managing resource uses to minimize and avoid further surface disturbance, the ARMPAs identify management actions to restore and improve GRSG habitat.

Habitat Management—The ARMPAs contain an overall habitat management objective that "[i]n all Sagebrush Focal Areas and Priority Habitat Management Areas, the desired condition is to maintain all lands ecologically capable of producing sagebrush (but no less than 70 percent) with a minimum of 15 percent sagebrush canopy cover, consistent with specific ecological site conditions." To move toward this goal, the ARMPAs specify GRSG habitat objectives to be incorporated into land management programs, including wild horses and burros (WHBs), grazing, and habitat restoration. These habitat objectives were developed for each of the GRSG's life history stages within each ARMPA's sub-region. These objectives will be used to meet the applicable land health standard in GRSG habitats.

Wild Horses and Burros—To address the localized threat due to negative influences of grazing by free-roaming WHBs, the BLM will focus on maintaining WHB herd management areas in GRSG habitat in established AML ranges. This is to achieve and maintain GRSG habitat objectives. It includes completing rangeland health assessments, prioritizing gathers and population growth suppression techniques, and developing or amending herd management area plans to incorporate GRSG habitat objectives and management considerations. The BLM will prioritize WHB management first in Sagebrush Focal Areas (SFAs), then the remainder of Priority Habitat Management Areas (PHMAs), and then General Habitat Management Areas (GHMAs). In SFAs and PHMAs, the BLM will assess and adjust AMLs through the NEPA process within herd management areas when WH&Bs are identified as a significant factor in not meeting land health standards, even if current AML is not being exceeded.

GRSG Approved Resource Management Plan Amendment (2019)

2.1.5 Wild Horses and Burros (WH&B)

Management Decisions (MD)
MD WHB 1: For WHB management activities (e.g., gathers), review Objective SSS 4 and apply MDs SSS 1 through SSS 4 when reviewing and analyzing projects and activities proposed in GRSG habitat.

MD WHB 4: Prioritize gathers and population growth suppression techniques in HMAs in GRSG habitat, unless removals are necessary in other areas to address

higher priority environmental issues, including herd health impacts. Place higher priority on herd areas not allocated as HMAs and occupied by wild horses and burros in PHMAs.

MD WHB 9: When conducting NEPA analysis for wild horse/burro management activities, water developments, or other rangeland improvements for wild horses, address the direct and indirect effects to GRSG populations and habitat. Implement any water developments or rangeland improvements using the criteria identified for domestic livestock.

MD WHB 10: Coordinate with professionals from other federal and state agencies, researchers at universities, and others to utilize and evaluate new management tools (e.g., population growth suppression, inventory techniques, and telemetry) for implementing the WH&B program.

1.4 Relationship to Statutes, Regulations, or other Plans

The Proposed Action is consistent with the following Federal laws and regulations, as well as with applicable State, and local plans, and guidelines to the maximum extent possible.

- United States Department of the Interior Greater Sage-Grouse Approved Resource Management Plan Amendment (2015 and 2019).
- Sierra Front/Northwest Great Basin Resource Advisory Council (RAC) Standards and Guidelines (February 12, 1997)
- Endangered Species Act – 1973
- National Environmental Policy Act of 1969 (as amended)
- Migratory Bird Treaty Act (1918 as amended) and Executive Order 13186 (1/11/01)
- Taylor Grazing Act (TGA) of 1934
- Federal Land Policy and Management Act (FLPMA) of 1976 (43 U.S.C. 1701 et seq.)
- Public Rangelands Improvement Act (PRIA) of 1978
- United States Department of the Interior Manual (910 DM 1.3).
- Fundamentals of Rangeland Health (43 CFR 4180)
- Title 43 CFR 4100 Grazing Administration-Exclusive of Alaska
- Section 106 of the National Historic Preservation Act of 1966 (as amended).
- American Indian Religious Freedom Act of 1979
- Archaeological Resource Protection Act of 1979
- National Historic Preservation Act of 1966, as amended
- United States Department of the Interior Manual (910 DM 1.3).

The Proposed Action is consistent with all applicable regulations at Title 43 Code of Federal Regulations (43 CFR) 4700 and policies. The Proposed Action is also consistent with the *Wild Free-Roaming Horses and Burros Act of 1971 (WFRHBA)*, which mandates the Bureau to *"prevent the range from deterioration associated with overpopulation"*, and *"remove excess horses in order to preserve and maintain a thriving natural ecological balance and multiple use relationships in that area"*. Also the WFRHBA of 1971 sec 3 (b)(1): *"The purpose of such*

inventory exists and whether action should be taken to remove excess animals; determine appropriate management levels or wild free-roaming horses and burros on these areas of public land; and determine whether appropriate managements should be achieved by the removal or destruction of excess animals, or other options (such as sterilization, or natural control on population levels).” Additionally, federal regulations at 43 CFR 4700.0-6 (a) state *“Wild horses shall be managed as self-sustaining populations of healthy animals in balance with other uses and the productive capacity of their habitat (emphasis added).”*

4710.4 Management of wild horses and burros shall be undertaken with the objective of limiting the animals’ distribution to herd areas.

According to 43 CFR 4720.2, upon written request from a private landowner, the authorized officer shall remove stray wild horses and burros from private lands as soon as practicable.

The Interior Board of Land Appeals (IBLA) in Animal Protection Institute et al., (118 IBLA 63, 75(1991)) found that under the Wild Free-Roaming Horses and Burros Act of 1971 (Public Law 92-195) BLM is not required to wait until the range has sustained resource damage to reduce the size of the herd, instead proper range management dictates removal of “excess animals” before range conditions deteriorate in order to preserve and maintain a thriving natural ecological balance and multiple-use relationship in that area.

1.5 Decision to be Made

The Authorized Officer would determine whether to implement all, part, or none of the Proposed Action or Alternatives as described in Section 2.1 to manage wild horses within the Jackson Mountains HMA. The Authorized Officer’s decision may select gather methods, number of horses gathered, and population growth suppression technique depending on the alternative or parts of any alternative chosen. The Authorized Officer would not set or adjust AML since these were set through previous decisions and the available monitoring data does not support adjustment of the AML at this time.

Chapter 2 Proposed Action and Alternatives

2.0 PROPOSED ACTION AND ALTERNATIVES

This section of the EA describes the Proposed Action and alternatives, including any that were considered but eliminated from detailed analysis. Alternatives analyzed in detail include the following:

Alternative A Proposed Action – Gather and Remove Excess wild horses to low AML, implement population growth suppression utilizing vaccines in horses, intra-uterine devices (IUDs) in mares, manage a non-

	reproducing portion of minimally-invasive sterilized mares, which would be up to approximately ¼ of the overall number of mares, and make sex ratio adjustments for horses so that males make up approximately 60% of the herd.
Alternative B	**Action –** Gather and Remove Excess wild horses to low AML, implement population growth suppression vaccines in horses, manage a non-reproducing portion of the population of geldings (castrated stallions) which would be no more than approximately ¼ of the overall herd size, and sex ratio adjustments for horses.
Alternative C	**Action –** Gather and Remove Excess wild horses to low AML; do not use any population growth suppression measures
Alternative D	**No Action –** Defer gather and removal of excess wild horses

Alternatives A-C were developed to respond to the identified resource issues and the Purpose and Need, to differing degrees and by differing means. Alternatives A-C would all guide the management over a period of 10 years, beginning at the time of the initial gather. Global Positioning Systems (GPS) radio collars and / or GPS tail tag transmitters may be used as part of monitoring efforts for Alternative A-C. Radio collars would not be used on Stallions (Schoenecker et al. 2020). Such collars and tags have been used to monitor wild horse movements in the states of Nevada, Utah, and Wyoming and are analyzed in chapter 3 of this EA.

Alternative D, No Action, would not achieve the identified Purpose and Need. However, it is analyzed in this EA to provide a basis for comparison with other action alternatives, and to assess the effects of not conducting a gather at this time. The No Action Alternative is inconsistent with the WFRHBA and the Winnemucca District Office RMP (2015) which requires the BLM to manage the population within AML.

2.1 Description of Alternatives Considered in Detail

2.1.1 Management Actions Common to Alternatives A-C

- The timing of the initial gather is subject to BLM Headquarters Office approval. Several factors such as animal condition, herd health, weather conditions, logistics, or other considerations could result in adjustments in the schedule. Multiple gathers may occur within a ten-year time frame that begins after the initial gather to achieve and maintain wild horse and burro populations within AML.
- Gather operations involve areas within the HMA as well as outside the HMA boundaries where excess wild horses are located.
- Gather operations would be conducted in accordance with the Comprehensive Animal Welfare Plan (CAWP; BLM 2021) Appendix A.
- All management activities would be humane, in accordance with the WFRHBA.
- A combination of gather methods may be used to complete the management actions and will depend on the needs of the specific actions to which method will be used. In addition to analysis of gathers to address the purpose and need, this EA and decision would

address management needs in regards to public safety, emergency situations and private land issues.

- Trap sites and temporary holding facilities would be located in previously used sites or other disturbed areas whenever possible. Undisturbed areas identified as potential trap sites or holding facilities would be inventoried for cultural resources, and sensitive species. If cultural resources or sensitive species are encountered, these locations would not be used unless they could be modified to avoid impacts.
- Decisions to humanely euthanize animals in field situations would be made in conformance with BLM policy (Permanent Instruction Memorandum 2021-007, attachment 1).
- Data including sex and age distribution, condition class information (using the Henneke body condition score (BCS)), color, size and other information may also be recorded, along with the disposition of the animal (removed or released).
- Hair follicle samples may be collected from a minimum of 10 animals returned to the range from each grazing allotment within the HMA to assess the current genetic diversity in the herd, and their relatedness to other, previously sampled herds. Samples would also be collected during future gathers as needed to determine whether BLM's management is maintaining acceptable genetic diversity (i.e., avoiding high risk of inbreeding depression).
- In the event that genetic monitoring indicates relatively low levels of observed heterozygosity (a measure of genetic diversity), additional wild horses could be introduced into the Jackson Mountains HMA to augment genetic diversity in the herd.
- A BLM contract Veterinarian, Animal and Plant Health Inspection Service (APHIS) Veterinarian or other licensed Veterinarian would be on call or on site as the gather is started and then as needed for the duration of the gather to examine animals and make recommendations to the BLM for the care and treatment of wild horses, and ensure humane treatment. Additionally, animals transported to all BLM wild horse facility are inspected by facility staff and the BLM contract Veterinarian, to observe health and ensure the animals have been cared for humanely.
- GPS radio collars may be attached to wild horse mares, and / or GPS tail tags may be attached to wild horses of either sex, for the purposes of monitoring movements and foaling status.
- Noxious weed monitoring at gather sites and temporary holding corrals would be conducted following the gather by BLM.
- Monitoring of rangeland forage condition and utilization, water availability, aerial population surveys and animal health would continue.
- Stream crossings would be avoided and/or the amount of times wild horses cross the a stream would be limited to minimize stream bank disturbance. In the event wild horses are herded across streams, wild horses would be herded across streams in multiple locations rather than in one concentrated area to minimize stream bank disturbance. Fish survey data would be utilized to identify areas of low or no Lahontan Cutthroat Trout (LCT) occupancy for use as crossing sites. In the event stream banks are trampled during the gather(s), stream bank areas would be restored to natural ground and replanted with native vegetation as soon as possible after the gather(s).

- Proposed gather activities within PHMAs, GHMAs, and Other Habitat Management Areas (OHMAs) would have the following Required Design Features:
    - RDF 7 - Require dust abatement practices when authorizing use on roads.
    - RDF 13 - Implement project site-cleaning practices to preclude the accumulation of debris, solid waste, putrescible wastes, and other potential anthropogenic subsidies for predators of GRSG.
    - RDF 19 - Instruct all construction employees to avoid harassment and disturbance of wildlife, especially during the GRSG breeding (e.g., courtship and nesting) season. In addition, pets shall not be permitted on site during construction (BLM 2005b).
    - RDF 21 – Outfit all reservoirs, pits, tanks, troughs or similar features with appropriate type and number of wildlife escape ramps (BLM 1990; Taylor and Tuttle 2007).
    - RDF 22 - Load and unload all equipment on existing roads to minimize disturbance to vegetation and soil.

BLM's Use of Contraception in Wild Horse Management

Expanding the use of population growth suppression (PGS) to slow population growth rates and reducing the number of animals removed from the range and sent to off-range pastures (ORPs) is a BLM priority (BLM 2020). The WFRHBA of 1971 specifically provides for sterilization (section 3.b.1). No finding of excess determination is required for BLM to pursue contraception in wild horses. Contraception has been shown to be a cost-effective and humane treatment to slow increases in wild horse populations or, when used with other techniques, to reduce horse population size (Bartholow 2004, de Seve and Boyles-Griffin 2013, Fonner and Bohara 2017). All fertility control methods in wild animals are associated with potential risks and benefits, including effects of handling, frequency of handling, physiological effects, behavioral effects, and reduced population growth rates (Hampton et al. 2015). Contraception by itself does not remove excess horses from an HMA's population, so if a wild horse population is in excess of AML, then contraception alone would result in some continuing environmental effects of horse overpopulation. Successful contraception reduces future reproduction. Limiting future population increases of horses could limit increases in environmental damage from higher densities of horses than currently exist. Horses are long-lived, potentially reaching 20 years of age or more in the wild and, if the population is above AML, treated horses and burros returned to the HMA may continue exerting negative environmental effects throughout their life span. In contrast, if horses above AML are removed when horses are gathered, that leads to an immediate decrease in the severity of ongoing detrimental environmental effects. A course of management actions that combines removals and fertility control can reduce negative effects of overpopulation in the near term, and also reduce the number of animals that must be removed from the range in the long term.

Successful contraception would be expected to reduce the effects of frequent gather activities on the environment, as well as wild horse management costs to taxpayers. Bartholow (2007) concluded that the application of 2 or 3-year contraceptives to wild mares could reduce operational costs in a project area by 12-20%, or up to 30% in carefully planned population management programs. He also concluded that contraceptive treatment would likely reduce the number of horses that must be removed in total, with associated cost reductions in the number of

adoptions and total holding costs. If applying contraception to horses requires capturing and handling horses, the risks and costs associated with capture and handling of horses may be comparable to those of gathering for removal, but adoption and long-term holding costs would be lower. Fonner and Bohara (2017) concluded that a combination of removals and PGS treatments is cost effective, and can lead to achieving on-range population size goals, while relying only on PGS methods cannot achieve population size goals in the short term. Selectively applying contraception to older animals and returning them to the HMA could reduce long-term holding costs for such horses, which are difficult to adopt, and could reduce the compensatory reproduction that often follows removals (Kirkpatrick and Turner 1991). On the other hand, selectively applying contraception to younger animals and allowing older animals to be the ones that continue to breed can slow the rate of genetic diversity loss in herds where that may be a concern – a process that tends to be slow in a long-lived animal with high levels of genetic diversity – and could reduce growth rates further by delaying the age of first parturition (Gross 2000). Although contraceptive treatments are associated with a number of potential physiological, behavioral, demographic, and genetic effects, detailed in Section 4, Environmental Effects and in Appendix D those concerns do not generally outweigh the potential benefits of using contraceptive treatments in situations where it is a management goal to reduce population growth rates (Garrott and Oli 2013). The Proposed Action reflects proposed management strategies that are consistent with the WFRHBA, which allows for sterilization as a means of population control as well as recommendations from the National Academy of Science (2013).

Helicopter Drive Trapping

If the local conditions require a helicopter drive-trap operation, the BLM would use a contractor or in-house gather team to perform the gather activities in cooperation with BLM and other appropriate personnel. The contractor would be required to conduct all helicopter operations in a safe manner and in compliance with Federal Aviation Administration (FAA) regulations 14 CFR § 91.119, BLM IM No. 2010-164.

Helicopter drive trapping involves use of a helicopter to herd wild horses into a temporary trap. The CAWP (BLM 2021, PIM 2021-002) or most current policy guidelines would be implemented to ensure that the gather is conducted in a safe and humane manner, and to minimize potential impacts or injury to the wild horses. Traps would be set in an area with high probability of access by horses using the topography, if possible, to assist with capturing excess wild horses residing within the area. Traps consist of a large catch pen with several connected holding corrals, jute-covered wings and a loading chute. The jute-covered wings are made of burlap like material, not wire, to avoid injury to the horses. The wings form an alley way used to guide the horses into the trap. Trap locations are changed during the gather to reduce the distance that the animals must travel. A helicopter is used to locate and herd wild horses to the trap location. The pilot uses a pressure and release system while guiding them to the trap site, allowing them to travel at their own pace. As the herd approaches the trap the pilot applies pressure and a ‘prada’ horse is released guiding the wild horses into the trap. Once horses are gathered they are removed from the trap and transported to a temporary holding facility where they are sorted.

If helicopter drive-trapping operations are needed to capture the targeted animals, BLM would assure that an Animal and Plant Health Inspection Service (APHIS) veterinarian or contracted

licensed veterinarian is on-site and/ or on-call during the gather to examine animals and make recommendations to BLM for care and treatment of wild horses. BLM staff would be present on the gather at all times to observe animal condition, ensure humane treatment of wild horses, and ensure contract requirements are met.

Bait/Water Trapping

Bait and/or water trapping may be used if circumstances require it or best fits the management action to be taken. Bait and/or water trapping generally require a longer window of time for success than helicopter drive trapping. Although the trap would be set in a high probability area for capturing excess wild horses residing within the area, and at the most effective time periods, time is required for the horses to acclimate to the trap and/or decide to access the water/bait.

Trapping involves setting up portable panels around an existing water source or in an active wild horse area, or around a pre-set water or bait source. The portable panels would be set up to allow wild horses to go freely in and out of the corral until they have adjusted to it. When the wild horses fully adapt to the corral, it is fitted with a gate system. The acclimation of the horses creates a low stress trapping method. During this acclimation period the horses would experience some stress due to the panels being setup and perceived access restriction to the water/bait source.

When actively trapping wild horses, the trap would be staffed or checked on a daily basis by either BLM personnel or authorized contractor staff. Horses would be either removed immediately or fed and watered for up to several days prior to transport to a holding facility. Existing roads would be used to access the trap sites.

Gathering excess horses using bait/water trapping could occur at any time of the year and traps would remain in place until the target number of animals are removed. Generally, bait/water trapping is most effective when a specific resource is limited, such as water during the summer months. For example, in some areas, a group of wild horses may congregate at a given watering site during the summer because few perennial water resources are available nearby. Under those circumstances, water trapping could be a useful means of reducing the number of horses at a given location, which can also relieve the resource pressure caused by too many horses. As the proposed bait and/or water trapping in this area is a low stress approach to gathering wild horses, such trapping can continue into the foaling season without undue harmto mares or foals.

Gather Related Temporary Holding Facilities (Corrals)

Wild horses that are gathered would be transported from the gather sites to a temporary holding corral in goose-neck trailers. At the temporary holding corral, wild horses would be sorted into different pens based on sex. The horses would be aged and provided good quality hay and water. Mares and their un-weaned foals would be kept in pens together. At the temporary holding facility, a veterinarian, when present, would provide recommendations to the BLM regarding care and treatment of the recently captured wild horses. Any animals affected by a chronic or incurable disease, injury, lameness or serious physical defect (such as severe tooth loss or wear, club foot, and other severe congenital abnormalities) would be humanely euthanized using

methods acceptable to the American Veterinary Medical Association (AVMA), consistent with BLM IM 2021-007 or updated policy.

Transport, Off-range Corrals, and Adoption Preparation

All gathered wild horses would be removed and transported to BLM holding facilities where they would be inspected by facility staff and, if needed, a contract veterinarian to observe health and ensure the animals are being humanely cared for.

Those wild horses that are removed from the range and are identified to not return to the range would be transported to the receiving off-range corrals (ORC, formerly short-term holding facility) in a goose-neck stock trailer or straight-deck semi-tractor trailers. Trucks and trailers used to haul the wild horses would be inspected prior to use to ensure wild horses can be safely transported. Wild horses would be segregated by age and sex when possible and loaded into separate compartments. Mares and their un-weaned foals may be shipped together. Transportation of recently captured wild horses is limited to a maximum of 10 hours.

Upon arrival, recently captured wild horses are off-loaded by compartment and placed in holding pens where they are provided good quality hay and water. Most wild horses begin to eat and drink immediately and adjust rapidly to their new situation. At the off-range corral, a contract veterinarian provides recommendations to the BLM regarding care, treatment, and if necessary, euthanasia of the recently captured wild horses. Wild horses in very thin condition or animals with injuries are sorted and placed in hospital pens, fed separately and/or treated for their injuries.

After recently captured wild horses have transitioned to their new environment, they are prepared for adoption, sale, or transport to Off-Range pastures. Preparation involves freeze-marking the animals with a unique identification number, vaccination against common diseases, castration, microchipping, and de-worming. At ORC facilities, a minimum of 700 square feet of space is provided per animal.

Adoption

Adoption applicants are required to have at least a 400 square foot corral with panels that are at least six feet tall. Applicants are required to provide adequate shelter, feed, and water. The BLM retains title to the horse for one year and inspects the horse and facilities during this period. After one year, the applicant may take title to the horse, at which point the horse becomes the property of the applicant. Adoptions are conducted in accordance with 43 CFR Subpart 4750.

Sale with Limitations

Buyers must fill out an application and be pre-approved before they may buy a wild horse. A sale-eligible wild horse is any animal that is more than 10 years old or has been offered unsuccessfully for adoption at least three times. The application also specifies that buyers cannot sell the horse to slaughter buyers or anyone who would sell the animals to a commercial

processing plant. Sales of wild horses are conducted in accordance with the WFRHBA (as amended) and congressional limitations.

Off-Range Pastures

When shipping wild horses for adoption, sale, or Off-Range Pastures (ORPs) the animals may be transported for up to a maximum of 24 hours. Immediately prior to transportation, and after every 24 hours of transportation, animals are offloaded and provided a minimum of 8 hours on-the-ground rest. During the rest period, each animal is provided access to unlimited amounts of clean water and two pounds of good quality hay per 100 pounds of body weight with adequate space to allow all animals to eat at one time.

Mares and sterilized stallions (geldings) are segregated into separate pastures. Although the animals are placed in ORP, they remain available for adoption or sale to qualified individuals; and foals born to pregnant mares in ORP are gathered and weaned when they reach about 8-12 months of age and are also made available for adoption. The ORP contracts specify the care that wild horses must receive to ensure they remain healthy and well-cared for. Handling by humans is minimized to the extent possible although regular on-the-ground observation by the ORP contractor and periodic counts of the wild horses to ascertain their well-being and safety are conducted by BLM personnel and/or veterinarians.

Euthanasia or Sale without Limitations

Under the WFRHBA (as amended), healthy excess wild horses can be euthanized or sold without limitation if there is no adoption demand for the animals. However, while euthanasia of healthy WHB and sale without limitation are allowed under the statute, these activities have not been permitted under current Congressional appropriations for over a decade and are consequently inconsistent with BLM policy. If Congress were to lift the current appropriations restrictions, then it is possible that excess horses removed from the Jackson Mountains HMA over the next 10 years could potentially be euthanized or sold without limitation consistent with the provisions of the WFRHBA.

Any old, sick or lame horses unable to maintain an acceptable body condition (greater than or equal to a Henneke BCS of 3) or with serious physical defects would be humanely euthanized either before gather activities begin or during the gather operations. Decisions to humanely euthanize animals in field situations would be made in conformance with BLM policy (Permenant Instruction Memorandum (PIM) 2021-007- or most current edition).

Public Viewing Opportunities

Opportunities for public observation of the gather activities on public lands would be provided, when and where feasible, and would be consistent with WO IM No. 2013-058 and the Visitation Protocol and Ground Rules for Helicopter WH&B Gathers. This protocol is intended to establish observation locations that reduce safety risks to the public during helicopter gathers (see Appendix B). Due to the nature of bait and water trapping operations, public viewing opportunities may only be provided at holding corrals.

2.2 Alternative A. Proposed Action

Alternative A: Gather and Remove Excess wild horses to low AML, implementation of population growth suppression utilizing vaccines for horses, IUDs for horses, sex ratio adjustments for horses and managing no more than approximately ¼ of the mares at low AML (ie. 13 mares) as a permanently non-reproducing portion of the population, including mares that are sterilized with a minimially-invasive procedure.

This action would gather approximately 90% of the existing wild horse population, remove excess animals, administer population control measures to a subset of gathered horses that are to be returned to the range, and return periodically to gather excess wild horses to maintain AML, over a period of ten years. After the initial gather, the target removal number would be adjusted accordingly based off contemporary population inventories for the Jackson Mountains HMA and the resulting projection of excess animals. The principal management goal for the HMA would be to retain a population of 130-173 wild horses, which is the low end to mid AML. The majority of mares returned to the HMA would be treated with a population growth suppression vaccine (i.e., Porcine Zona Pellucida (PZP) ZonaStat, PZP vaccine pellets (PZP-22), GonaCon-Equine, or most current formulation; see Appendix C) or an IUD. Only mares that are not pregnant would be considered for treatment with an IUD. The remainder of mares returned to the HMA would be treated with a humane, minimally-invasive sterilization procedure (defined and addressed in Appendix D). Up to approximately ¼ of the population of mares at low AML (i.e., approximately 13 animals) would be managed as a non-reproducing component, comprised of sterilized mares. The sex ratio adjustments for horses would temporarily lead to males being up to 60% of the herd. The procedures to be followed for minimally invasive mare sterilization are described in Appendix D.

If gather efficiencies during the initial gather do not allow enough horses to be captured to reach low AML and treat the intended number of animals with vaccines, IUDs, minimally invasive sterilization, BLM would subsequently return to the HMA to remove excess wild horses above low AML and would conduct follow-up gathers over a 10 year period to remove any additional animals necessary to achieve and maintain the low range of AML as well as to allow BLM to gather a sufficient number of wild horses so as to implement the fertility control components of this action alternative.

If gather efficiencies of the initial gather exceed the target removal number of horses necessary to bring the population to low AML, this would allow the BLM to begin implementing the population control components (fertility control vaccines for horses; IUDs, mare sterilization, and sex ratio adjustment) of this alternative with the initial gather. In this scenario, mares treated with fertility control measures would be released back into the Jackson Mountains HMA, as would the appropriate number of stallions necessary to achieve the 60:40 goal for the male to female sex ratio. Population inventories and routine resource/habitat monitoring would be completed between gather cycles to document current population levels, growth rates, and areas for any follow-up gather. The subsequent maintenance gather activities would be conducted in a manner consistent with those described for the initial gather and could be conducted during the period of November through February which is identified as the period of maximum effectiveness for fertility control vaccine application. Funding limitations and competing

priorities might impact the timing of maintenance gather and population control components of this action.

The Procedures to be followed for implementing fertility control vaccines and IUDs are detailed in Appendix D. Any animals that receive fertility control treatments would be freeze marked and receive a uniquely numbered RFID chip for the purpose of identifying the treated animals and tracking their treatment history. At the AML level established for the HMA and based on known seasonal movements of the horses (BLM), sufficient genetic exchange should occur to maintain the genetic health of the population, even if some of the horse herd is temporarily non-reproductive as a result of vaccines or IUDs, and if 1/4 of the mares at low AML are permanently non-reproductive. All horses identified to remain in the HMA would be selected to maintain a diverse age structure, herd characteristics, and body type (conformation). Please refer to Appendix D for further information on BLM's use of population growth suppression in wild horse management, and analyses of anticipated effects.

Under Alternative A, no gathered mare younger than the age of 5 would be returned to the Jackson Mountains HMA, and one or more of the minimally invasive sterilization procedures discussed in detail in Appendix D would be conducted on a selection of mares to be returned to the HMA. All mares considered for sterilization would be 5 years old or older and would, therefore have already had some opportunity to reproduce. Any mares receiving an IUD or a minimally invasive sterilization procedure would be required to be not pregnant at the time, and at a minimum body condition score of 3 (See Appendix N, Body Condition Score Chart); however, BLM BRFO will prioritize treatment to horses with body scores of 4 or better to increase the likelihood of a faster recovery. Only a veterinarian experienced in the use of ultrasonography to determine pregnancy status would conduct pregnancy screenings. Only a veterinarian would apply any IUD. At no time would more than ¼ of the existing population on the range be sterile after the total population is within AML.

For any minimally invasive sterilization procedure in which animal handling will be required, a veterinarian will conduct the procedure and ensure use of appropriate sedation, anesthesia, analgesics and antibiotics. The procedures may take place at a private veterinarian's facility or at a contract facility approved by BLM thus giving the horses the best possible care and post operation welfare observation and recovery. Treated mares will remain at the facility for welfare monitoring and until the veterinarian is confident they are healing enough to be released. For observation opportunities please reference Appendix B.

Even when the population size of the horse herd is at the low end of AML, ¾ or more of the mares in the herd would still be potentially reproductive. Hair samples would be collected for genetic monitoring during the initial gather, and then subsequently every 5-10 years; with even higher frequency if the initial results indicate that is warranted. If genetic monitoring results show a need to increase observed heterozygosity levels then BLM would augment the genetic diversity in the herd by introducing fertile adults from other HMAs.

2.3 Alternative B.

Alternative B is similar to Alternative A, except that released mares would not receive Intra-

Uterine Devices (IUDs) or any minimally invasive sterilization procedures. The permanently non-reproducing portion of the horse population in the HMA would be no more than ¼ of the total herd at low AML (approximately 33 animals), but those would be limited to geldings. This alternative is not expected to reduce annual horse herd growth rates as much as Alternative A, but because the geldings would be a part of the total number of animals at AML and because a 60:40 sex ratio would be the target for management, it is expected that the need for maintenance gathers over time would be less frequent than under alternatives C or D.

2.4 Alternative C.

Alternative C is similar to Alternative A, except that gathers would be the only method of population management in the Jackson Mountains HMA. The BLM would gather and remove excess wild horses from within and outside the HMA to achieve AML with additional maintenance gathers for 10 years after the initial gather. Population suppression measures would not be applied and no changes to the herd's sex ratios would be made. Under this alternative, it is anticipated that maintenance gathers would need to occur within five years following the achievement of low AML.

2.5 Alternative D. No Action. Defer Gather and Removal of Excess Wild Horses

Under the No Action Alternative, no gather or removal of excess wild horses would occur and there would be no additional management actions undertaken to control the overpopulation of wild horses within the project area at this time. The No Action Alternative does not comply with the WFRHBA of 1971, Regulations, or Winnemucca District RMP/ROD and does not meet the purpose and need for the actions in this EA. It is included as a basis for comparison with the Proposed Action.

2.5 Alternatives Considered But Eliminated From Detailed Analysis

Use of Bait and/or Water Trapping Only

An alternative considered but eliminated from detailed analysis was use of bait and/or water trapping as the sole gathering method. The use of bait and water trapping, though effective in specific areas and circumstances, would not be timely, cost-effective or practical as the sole gather method for the Jackson Mountains HMA. However, water or bait trapping may be used as a supplementary approach to achieve the desired goals of Alternatives A-C if gather efficiencies are too low using a helicopter, if a helicopter gather cannot be timely scheduled, or for maintenance gathers. This alternative was dismissed from detailed study as a primary or sole gather method for the following reasons:

1. The project area is too large to effectively use this gather method as the primary or sole method;

2. Road access for vehicles to potential trapping locations necessary to get equipment in/out as well as safely transport gathered wild horses is limited.

3. The large numbers of horses proposed to be gathered would make water or bait trapping as a sole capture method impossible within a reasonable time frame, due to terrain, management status of land (ie. Wilderness), etc.

Exclusive use of Field Darting PZP Treatment

Under this scenario, BLM would administer PZP in the one year liquid dose inoculations by field darting the mares as the sole method of population management. This method is currently approved for use and is being utilized by BLM in a small number of other HMAs. This alternative was dismissed from detailed study for the following reasons: (1) the size of the area at 775,000 acres is too large to use this method; (2) the area has multiple wilderness areas which restricts access/activites within the area. (3) the presence of water sources on both private and public lands inside and outside the HMA would make it almost impossible to restrict wild horse access to be able to dart horses consistently; (4) horse behavior limits their approachability/ accessibility, so that the number of mares expected to be treatable via darting would be insufficient to control growth; and (5) BLM would have difficulties keeping records of unmarked animals that have been treated due to common and similar colors and patterns in this herd. For these reasons, this alternative was determined to not be an effective or feasible method for managing wild horses from the Jackson Mountains HMA.

Gathering the Jackson Mountains HMA to upper level AML

Gathering wild horses to achieve a post-gather population size at the upper level of the AML range would result in AML being exceeded with the next foaling season.

The upper levels of the AML range established for the HMA represents the maximum population for which a thriving natural ecological balance can be maintained. The lower range represents the number of animals that should remain in the HMA following a wild horse gather in order to allow for a periodic gather cycle of approximately every four years and to prevent the population from exceeding the established AML between gathers. The need to gather below the upper range of AML has been recognized by the IBLA, which has held that:

> ". . . the term AML within the context of the statute to mean[s] that "optimum number" of wild horses which results in a thriving natural eco- logical balance and avoids a deterioration of the range." (Animal Protection Institute of America v. Nevada BLM. 1989b)

Proper range management dictates removal of horses before the herd size causes damage to the range land. Thus, the optimum number of horses is fewer than the number that would cause damage. Removal of horses before range conditions deteriorate ensures that horses enjoy adequate forage and an ecological balance is maintained (Animal Protection Institute of America et al. v. Rock Springs District BLM 1991).

Additionally, gathering to the upper level of AML would result in the need to follow up with another gather within one year, and could result in over utilization of vegetation resources,

damage to the rangeland, and increased stress to wild horses. For these reasons, this alternative did not receive further consideration in this document.

Control of Wild Horse Numbers by Natural Means

This alternative would use natural means, such as natural predation and weather, to control the wild horse population. This alternative was eliminated from further consideration because it would be contrary to the WFRHBA which requires the BLM to protect the range from deterioration associated with an overpopulation of wild horses and burros. The alternative of using natural controls to achieve a desirable AML has not been shown to be feasible (NAS 2013). Wild horse populations in the Jackson Mountains HMA are not substantially regulated by predators, as evidenced by the 15-25% annual increase in the wild horse populations. In addition, wild horses are a long-lived species with documented foal survival rates that may exceed 95% (Ransom et al. 2016) and are not a 'self-regulating' species. This alternative would allow for a steady increase in the wild horse populations which would continue to exceed the carrying capacity of the range and would cause increasing damage to the rangelands until severe range degradation or natural conditions that occur periodically – such as blizzards or extreme drought – cause a catastrophic mortality of wild horses in the HMA.

Raising the Appropriate Management Levels for Wild Horses

This alternative was not brought forward for detailed analysis because it would be outside of the scope of the analysis, and would be inconsistent with the WFRHBA which directs the Secretary to immediately remove excess wild horses and to manage for a thriving natural ecological balance and for multiple uses. The AML was last reevaluated in the WDO Resource Management Plan (2015) and there is no basis for modifying the AML at this time. Available data shows that excess wild horses are present on the range, that excess horses need to be removed, and that there is insufficient water and forage within the HMA to support an increase in the wild horse AML. Given the resource degradation occurring with the current overpopulation of wild horses, it is necessary to bring the population back to AML first so the agency can collect data that would help inform whether the range could support additional horses above currently defined AML levels, while still ensuring a thriving natural ecological balance. Given the absence of data that would support a modification to the AML, and the requirement of an RMP amendment, this gather decision is not an appropriate mechanism for adjusting AML.

Remove or Reduce Livestock within the Jackson Mountains HMA

This alternative would involve no removal of wild horses and would instead address the excess wild horse numbers and associated range deterioration through the removal of livestock or reductions in livestock grazing allocations within the HMA. This alternative was not brought forward for analysis because it would be inconsistent with the current land use plans. This gather document and subsequent Decision Record is not the appropriate mechanism for adjusting the authorized livestock use within the allotments associated with the HMA in order to reallocate forage to wild horses.

The proposal to reduce livestock would not meet the purpose and need for action. Monitoring indicates that the current overpopulation of wild horses is causing resource degradation and that there is insufficient water and forage for the number of horses present, resulting in their movement to public and private lands that are not managed for wild horses.

This alternative would also be inconsistent with the WFRHBA, which directs the Secretary to immediately remove excess wild horses. Livestock grazing can only be reduced or eliminated if BLM follows regulations at 43 CFR § 4100 and must be consistent with multiple use allocations set forth in the land-use plan. Such changes to livestock grazing cannot be made through a wild horse gather decision, and are only possible if BLM first revises the land-use plans to re-allocate livestock forage to wild horses and to eliminate or reduce livestock grazing.

Furthermore, re-allocation of livestock AUMs to increase the wild horse AMLs would not achieve a thriving natural ecological balance due to differences in how wild horses and livestock graze. Unlike livestock which can be confined to specific pastures, limited periods of use, and specific seasons-of-use so as to minimize impacts to vegetation during the critical growing season or to riparian zones during the summer months, wild horses are present year-round and their impacts to rangeland resources cannot be controlled through establishment of a grazing system, such as for livestock. Thus, impacts from wild horses can only be addressed by limiting their numbers to a level that does not adversely impact rangeland resources and other multiple uses.

While the BLM is authorized to remove livestock from HMAs "if necessary to provide habitat for wild horses or burros, to implement herd management actions, or to protect wild horses or burros from disease, harassment or injury" (43 CFR§ 4710.5), this authority is usually applied in cases of emergency and not for general management of wild horses since it cannot be applied in a manner that would be inconsistent with the existing land-use plans. (43 CFR § 4710.1)
For the reasons stated above, this alternative was dropped from detailed analysis. For modifications in long-term multiple use management, changes in forage allocations between livestock and wild horses would have to be re-evaluated and implemented through the appropriate public decision-making processes to determine whether a thriving natural ecological balance can be achieved at a higher AML and in order to modify the current multiple use relationship established in the land-use plans.

Control of Wild Horse Numbers by Fertility Control Treatment Only

This alternative would repeatedly gather a significant portion of the existing population (95%) and implement fertility control treatments only, without removal of excess horses was modeled using a three- year gather/treatment interval over a 20 year period. Based on preliminary modeling, this alternative would not result in attainment of the AML range for the Jackson Mountains HMA and the wild horse population would continue to have an average population growth rate of 0.8% to 6.9%, adding to the current wild horse overpopulation, albeit at a slower rate of growth. Over the

next 21 years, on average 7,650 horses would need to be gathered[2],of those 3,340 horses[3] would have been treated, and the resulting population would be 1,300 which is still 1,083 horses over (and 5 times) high range AML. This alternative would not bring the horse population to AML and would allow the wild horse population to continue to grow even further in excess of AML, resource concerns would escalate, and implementation of this alternative would result in significantly increased gather and fertility control costs without achieving a thriving natural ecological balance. Existing studies also give the general result that management plans that rely exclusively on fertility control methods will not lead to AML being achieved in the near future (i.e., Fonner and Bohara 2017). This alternative would not meet the purpose and need for the proposed action and therefore was eliminated from further consideration.

Use of Alternative Capture Techniques Instead of Helicopter Capture

The BLM identified chemical immobilization, net gunning, and wrangler/horseback drive trapping as potential alternative methods for gathering wild horses. Net gunning techniques normally used to capture big game animals also rely on helicopters, and may be associated with high injury rates. Chemical immobilization is a very specialized technique and strictly regulated. Currently the BLM does not have sufficient expertise to implement either of these methods and it would be impractical to use given the size of the project area, access limitations, and difficulties in approachability of the wild horses.

Use of wrangler on horseback drive-trapping to remove excess wild horses can be fairly effective on a small scale. However, given the number of excess wild horses to be removed, the large geographic size of the gather area, access limitations, and difficulties in approaching the wild horses this technique would be ineffective and impractical. Horseback drive-trapping is also very labor intensive and can be very dangerous to the domestic horses and the wranglers used to herd the wild horses. Domestic horses can easily be injured while covering rough terrain and the wrangler could be injured if he/she falls off. For these reasons, this alternative was eliminated from further consideration.

Designation of the HMA to be Managed Principally for Wild Horses

This action under 43 CFR 4710.3-2 would require amendment of the *WDO RMP (2015)*, which is outside the scope of this EA. The Jackson Mountains HMA is not currently designated as a wild horse 'range.' Only the BLM Director or Assistant Director (as per BLM Manual 1203: Delegation of Authority), may establish a Wild Horse and Burro Range after a full assessment of the impact on other resources through the land-use planning process. Wild Horse and Burro Range is not an "exclusive" designation. Designation would not necessarily exclude livestock use; therefore levels of livestock grazing permitted could remain the same.

2 Each time a horse is gathered is counted, even though the same horse may be gathered multiple times during the 21 year period.

3 Each time a horse is treated with PZP-22 is counted, even though the same horse may be treated multiple times over the 21 year period.

Chapter 3 Affected Environment and Environmental Effects

3.1 General Setting

The Jackson Mountains HMA is located approximately 60 miles west northwest of Winnemucca, Nevada. The Jackson Mountains HMA is approximately 283,000 acres in size, with 274,510 acres of public lands and 8,490 acres of private land. This is considered the primary gather area, although the total gather area is approximately 775,000 acres to encompass horses residing in non-HMA areas in their search for water, forage and space (see Map 1). The area is bordered on the west by the Black Rock Desert, on the east by Desert Valley, on the north by State Highway 140 and the Quinn River, and on the south by the Union Pacific Railroad.

Terrain varies from level valleys to steep, rugged mountains, with elevations ranging from 4,000 feet at the valley floor to 8,923 feet at King Lear Peak. Climate within the HMA is characterized by warm dry days, cool nights and low yearly precipitation that range from 4 inches at lower elevations to approximately 16 inches at higher elevations. Most precipitation occurs as winter snow.

In the Great Basin high desert of Nevada the average annual precipitation is often less than 11 inches (which defines the term desert). Drought conditions occur as frequently as 6 out of every 10 years. Drought is defined by the Society for Range Management as "…prolonged dry weather when precipitation is less than 75% of the average amount" (SRM 1989).

3.2 Description of Affected Resources/IssuesDiscription of Affected Resources/Issues

3.3 To comply with the National Environmental Policy Act, the following elements of the human environment are subject to requirements specified in statute, regulation or executive order and must be considered.

Table 2: Supplemental Authorities (Critical Elements of the Human Environment)

Supplemental Authorities	Present	Affected	Rationale
Air Quality	YES	NO	The proposed gather area is not within an area of non-attainment or areas where total suspended particulates exceed Nevada air quality standards. Areas of disturbance would be small and temporary.
Areas of Critical Environmental Concern (ACEC's)	NO	NO	Resource not Present.

Supplemental Authorities	Present	Affected	Rationale
Cultural Resources	YES	YES	Trap sites and/or holding corrals would be placed in already disturbed areas or would be inventoried prior to use. Locations would avoid cultural resource sites. Carried through analysis below.
Environmental Justice	NO	NO	Resource not affected.
Floodplains	NO	NO	Resource not present.
Invasive, Nonnative Species	YES	YES	Any noxious weeds or non-native invasive weeds would be avoided when establishing trap and/or holding facilities, would not be driven through. Noxious weed monitoring at trap/holding sites would be conducted and applicable treatment of weeds would occur per Noxious Weed Control EA#NV-020-02-19 as needed. Carried though the analysis.
Migratory Birds	YES	YES	Carried through analysis below.
Native American Religious Concerns	YES	YES	Carried through analysis below.
Prime or Unique Farmlands	NO	NO	Resource not present.
Threatened & Endangered Species	YES	YES	Carried through analysis below.
Wastes, Hazardous or Solid	NO	NO	Resource not present.
Water Quality (Surface/Ground)	YES	YES	Surface water would be affected and is carried through analysis below. Ground water would not be affected.
Wetlands and Riparian Zones	YES	YES	Carried through analysis below.
Wild and Scenic Rivers	NO	NO	Resource not present.
Wilderness	YES	YES	Carried through analysis below.

Critical elements identified as present and potentially affected by the Action Alternatives (Alternatives A-C) and/or the No Action Alternative include: Cultural Resources, Migratory Birds, Native American Religious Concerns, Threatened & Endangered Species, Water Quality, Wetlands and Riparian Zones, and Wilderness. Additional discussion is included in the following

3.2.1 Cultural Resources

The gather area includes a wide diversity of cultural resources from different time periods. Trap

sites and holding areas are the locations that could potentially impact cultural resources. Previous inventories have identified prehistoric sites (rock art sites, lithic scatters, isolated projectile points, etc.) throughout the area. The highest concentration of prehistoric sites is in association with permanent and intermittent water sources.

Impacts to cultural resources are not anticipated because gather sites and temporary holding facilities would be placed in previously disturbed areas, previously inventoried areas with negative results for cultural resources, or would be inventoried for cultural resources. If cultural resources are encountered, these locations would not be utilized unless the facilities could be repositioned to avoid impacts to cultural resources.

Areas in the vicinity of permanent and intermittent water sources (i.e., riparian areas) have the highest potential for cultural resource sites. Since wild horses concentrate in these areas, soils are most likely to be compacted, increasing runoff and subsequently increasing erosion.

Environmental Affects
Alternatives A-C

Removal of excess wild horses under the three alternatives would lead to a reduction in impacts to cultural resources in riparian zones where concentrations of horses can lead to damage and displacement of artifacts and features as well as erosion of surface cultural deposits containing valuable information.

Alternative D
Since this alternative does not remove wild horses from the rangeland, impacts would continue to occur at archaeological sites.

3.2.2 Invasive, Nonnative Species

Several federal laws, regulations and policies guide BLM management activities to control noxious weeds and invasive non-native species on public lands. Laws applicable to control invasive vegetation include: the Federal Land Policy and Management Act; Carlson-Foley Act of 1968; Plant Protection Act of 2000; Federal Noxious Weed Act of 1974; The Federal Insecticide, Fungicide and Rodenticide Act of 1972; and the Noxious Weed Control Act of 2004. To comply with these Laws, BLM policy directs the agency to inventory and control invasive vegetation utilizing integrated weed control management techniques.

Nevada Revised Statutes, Chapter 555.05 defines “noxious weeds” and mandates land owners and land management agencies to include control of noxious weeds on lands under their jurisdiction.

Nevada has listed 47 non-native invasive plant species that require control. Of these 47 species, 14 species have been identified in the Winnemucca District, see Appendix E.

Weed infestations have been found within the Jackson Mountains gather area including; Scotch thistle (*Onopordum acanthium*), hoary cress (*Cardaria draba*), Russian knapweed (*Acroptilon repens*), perennial pepperweed (*Lepidium latifolium)* and bull thistle (*Cirsium vulgare*) have been observed within the Jackson Mountains HMA gather area. Saltcedar (*Tamarix spp.*) has also been

observed throughout the gather area; infestations are mainly focused in and along riparian areas and have been documented around both Bull Creek and Jackson Creek. Infestations of exotic annual plants including cheat grass (*Bromus tectorum*), tumble mustard (*Sisymbrium altissimum*), halogeton (*Halogeton glomerata*), and Russian thistle (*Salsola tragus*) commonly dominate areas that have been previously overgrazed or have burned from wildfire. The entire project area has not been inventoried for the presence of invasive non-native species.

Environmental Affects

Alternative A-C

Areas most vulnerable to establishment of invasive vegetation are heavily disturbed areas, such as trap sites and temporary holding facilities. These areas would be prioritized for follow up inventory and treatment reducing the potential for establishment and spread. Setting trap sites and holding facilities outside of areas known to contain noxious or non-native species would limit the potential to spread invasive vegetation.

In areas where perennial vegetation is sparse, helicopter use could cause the removal of vegetation around landing zones; these areas would be susceptible to erosion and invasive species establishment. Using sites with established perennial vegetation likely to withstand helicopter pressure would limit the potential for vegetation removal and spread. Selecting landing zones outside of areas known to contain noxious or non-native species would also limit the potential to spread invasive vegetation.

Rangeland not heavily disturbed from gather operations contain native shrubs, understory grasses, and forbs that remain intact and would serve to compete with the invasive annual species. Following BLM policy, integrated weed management practices including continued treatments throughout the area, would help control the spread of invasive vegetation along roadsides and other areas used during gather operations.

The action alternatives are anticipated to result in fewer invasive species within the gather area in the long term. Wild horses have been associated with the spread of invasive exotic plants, including cheatgrass (King et al. 2019). By decreasing wild horse and burro populations levels, associated utilization levels in the uplands and the riparian areas are anticipated to also decrease. This would enable native species to seed out, while enhancing plant vigor, and increasing the competitive abilities of native vegetation with invasive species.

Alternative D

The No Action Alternative would not result in impacts from gather operations.

3.2.3 Migratory Birds

The protection of birds is regulated by the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA). Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668 (a))

The U.S. Fish and Wildlife Service's Birds of Conservation Concern (2008) report identifies species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become listed under the Endangered Species Act as amended

(16 U.S.C 1531 et seq.). Bird nest survival may be lower in areas with wild horses (Zalba and Cozzani 2004), and bird populations have recovered substantially after livestock and / or wild horses have been removed (Earnst et al. 2005; Earnst et al. 2012; Batchelor et al. 2015).
An assessment area-wide inventory has not been completed for this project. Rather, the potential for migratory birds to occur within the assessment area was determined by reviewing the Nevada Natural Heritage Program (NNHP) database, Nevada Department of Wildlife (NDOW) known occurrence data, and knowledge of migratory birds within the Winnemucca District. A list of MBTA protected birds are found in 50 C.F.R. 10.13.

Environmental Affects

Alternative A-C

The project area contains riparian and sagebrush habitats, therefore potential impacts to neo-tropical migrants may be expected. The action alternatives would not impact migratory bird populations. The gather could occur when migratory species are within the HMA. Small areas of migratory bird habitat would be impacted by trampling at trap sites and holding facilities. This impact would be minimal (generally less than 0.5 acre/trap site), temporary, and short-term (two weeks or less) in nature. The reduction in the current WHB populations would provide opportunity for vegetative communities to progress toward achieving a thriving natural ecological balance. The action alternatives would support a more diverse vegetative composition and structure through improvement and maintenance of healthy populations of native perennial plants. Habitat improvements would result for migratory bird species including loggerhead shrikes, Brewer's sparrows, sage thrashers, burrowing owls and migratory and resident raptor species. According to Paige and Ritter (1999), "Long–term heavy grazing may ultimately reduce prey habitat and degrade the vegetation structure for nesting and roosting. Light to moderate grazing may provide open foraging habitat."

Alternative D

The continued over-population of wild horses within the HMA would lead to impacts due to the increasing inability of rangelands to support healthy populations of native perennial plants. These impacts to vegetative communities would increase each year that a gather is postponed.

3.2.4 Native American Religious Concerns

Numerous laws and regulations require consideration of Native American concerns. These include the National Historic Preservation Act of 1966 as Amended (NHPA), the American Indian Religious Freedom Act of 1978 (AIRFA) as amended, Executive Order 13007 (Indian Sacred Sites), Executive Order 13175 (Consultation and Coordination with Tribal Governments), the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA), the Archaeological Resources Protection Act of 1979 (ARPA) as well as NEPA and FLPMA.

The proposed action is within the traditional territory of the the Atsakudöka tuviwarai ("red butte dwellers"), Madökadö ("wild onion eaters"), and the Sawa'waktödö-tuviwarai ("sage-brush mountain dwellers") bands of Northern Paiute peoples (Stewart 1941). These bands are identified with modern groups that include the Summit Lake Paiute Tribe, the Fort McDermitt Paiute and Shoshone Tribe, the Pyramid Lake Paiute Tribe, and Winnemucca Indian Colony.

Horses are believed to have been introduced into the Paiute and Shoshone societies from trade

with the Comanche and other Plains groups (Shimkin 1986). By the mid-19th century, the horse had a substantial impact on the political organization of the Paiute and Shoshone, plus their subsistence and trade. The ethnographic literature presents no clear cut trend on whether horses were used as food by the Northern Paiutes and Shoshone. Some Native Americans argue though that the horse has always been in Nevada since time immemorial.

Environmental Affects

Alternatives A-C

Native Americans utilize a variety of plants for medicinal and other uses. They also consider all water to be sacred. Several hundred springs are located within the gather area. Both of these resources can be adversely affected by domestic and wild horses. Removal of horses would benefit vegetation growth and spring health.

Alternative D

Under this alternative, without the removal of horses, springs and vegetation would continue to be degraded.

3.2.5 Threatened & Endangered Species

BLM is required by the Endangered Species Act of 1973, as amended (ESA) to ensure that no federal action jeopardizes a threatened, endangered, or proposed species. A list of federally listed, proposed or candidate species was requested from the U.S. Fish and Wildlife Service for the proposed project area. The Fish and Wildlife Service responded that the following species may be found within the proposed project area: 1) Lahontan cutthroat trout (*Oncorhynchus clarkii henshawi)* (LCT) as a threatened species; 2) Monarch butterfly (*Danaus plexippus*) as a candidate species.

<u>Lahontan cutthroat trout</u>

LCT is a federally listed Threatened species since 1975 (Federal Register Vol. 40, p. 29864). The project area contains five streams that were identified in the 1995 USFWS LCT Recovery plan or in the 1999 NDOW Species Management Plan for LCT as priority streams for LCT recovery. The five streams are Jackson Creek, Happy Creek, Mary Sloan Creek, Bottle Creek, and Big Creek. Jackson Creek is the only stream within the gather area that currently supports an existing population of LCT.

While limited monitoring data exists for these occupied and revocery systems, the available data for Jackson and Happy creeks suggests light to moderate utilization and steam bank impacts associated with wild horses.

<u>Monarch Butterfly</u>

Monarch butterfly is a candidate species being considered for listing under the ESA as of December 2020. Monarch butterfly survival is dependent on their obligate milkweed host plant (primarily *Asclepias spp.*). Monarch butterfly and milkweed host plants may occur within the project area. Due to the proposed project being short term in nature and majority of trap sites occurring within previously disturbed areas, the proposed activities are anticipated to have minimal effects on monarch butterflies and their habitat; therefore, this species has been dismissed from further analysis.

Environmental Affects
Alternative A-C

The action alternatives, resulting in decreased wild horse population levels would directly benefit the LCT found within the project area. The decrease in wild horse populations would result in lower utilization levels found in riparian areas and would be expected to result in less damage to the springs and streams, thus increasing habitat quality for LCT .

Impacts to LCT would be minimal due to the short-term duration of any helicopter gather activities. Although horses may cross streams during gather operations causing some trampling in riparian areas and stream banks, any impacts would be short-term and minor. The stream banks could receive greater impacts than under normal wild horse movement crossing a stream with larger numbers when being herded by the helicopter. Stream bank damage would be minimized partially due to the timing of the proposed action and soil conditions (dry or potentially frozen). The likelihood of adverse effects to LCT is also minimized because the proposed work will be completed outside the spawning season for LCT (between April and July). No impacts would occur to LCT from trap/holding sites, observers, or increased traffic associated with gather operations since construction of these areas on LCT streams is prohibited.

Immediate and long term beneficial effects to LCT in the project area include the reduction of the size of the wild horse herds from a current estimate of 1,018 to approximately 130–217 wild horses. This reduction will reduce the effects that large numbers of horses have on stream bank trampling, increased sedimentation, reduced vegetation cover, and improve habitat conditions for LCT. No critical habitat has been designated for LCT; therefore, none will be affected.

Alternative D
Under this alternative, population levels of wild horse would continue to increase within the project area. The increase in wild horse populations would result in increased utilization levels, increased streambank trampling, sediment input, and reduced vegetation cover found in riparian areas. Increases in wild horse populations could result in further damage to the springs and streams, thus impacting habitat quality for LCT .

3.2.6 Water Quality (Surface and Ground)

There are roughly 630 miles of mapped perennial, intermittent, and ephemeral streams within the HMA. According to surface water quality inventories completed between 2000 and 2004, lotic (flowing) waters within the allotment are generally of good quality. This is indicated by relatively low turbidity (high clarity), low temperatures (less than 20°C during August), and relatively low electrical conductivities (averaging 370 µS/cm). Coliform bacteria appear to be the greatest concern with values being very high or beyond measurement in some cases, especially during warmer months when discharges were lower and temperatures were higher. Data for water quality in lentic (non-flowing) water sources are not available. Persistence of surface water is highly variable annually depending on climatic variations. One creek within the HMA, Bottle Creek, has been designated as a classified water by the state of Nevada. Bottle Creek is rated a Class A water, the highest rating for water quality- which means the water should remain suitable for drinking,

culinary or food processing purposes, primary and secondary contact recreation, fishing, and for wildlife propagation and survival.

Environmental Affects

Alternative A-C

All action alternatives would result in impacts to water quality. However, the degree and timing of these impacts would vary under each alternative. Effects from impacts would likely be negligible relative to variations in the affected environment or would be of such short duration that would not be measurable and would not remain any longer than the gather activities themselves. These effects include increased sediment loading to streams occur when wild horses cross streams or springs as they are herded to temporary gather sites. Other impacts would be related to wild horse population size. Use of riparian areas by wild horses during non-gather periods leads to increased sediment loading from hoof action and reduction of vegetation as well as the introduction of excess nutrients and bacteria from feces and urine. Loss of vegetation can also lead to increased surface water temperatures due to decreased shade. All alternatives would aim to reduce the total number of horses in the HMA which would reduce utilization pressure at all surface water sources. Reduced use is anticipated to allow regeneration of riparian vegetation which would lead to a restored hydrologic function over time. This would reduce sediment loading through reduced erosion and keep water temperatures low via increased shading.

Alternative D

Under this alternative, the wild horse population within the HMA would not be reduced. Increased competition at currently utilized surface water sources would lead to increased introduction of excess sediment, nutrients, and bacteria. Increasing horse numbers would encourage individual horses to travel further in search of available water sources leading to an increased number of surface water sources being impacted by wild horse use.

3.2.7 Wetlands and Riparian Zones

Numerous wetland areas are scattered through the HMA, and range in size from small seeps to large meadow complexes. Simialry, perennial and intermittent streams are also present within the HMA, and are commonly spring fed and snow melt driven systems, respectively. These areas typically occupy a small percentage of the landscape, but are disproportionately important centers for biodiversity. They often provide the only available source of water for many miles, and are used by wild horses, livestock, birds, and many types of wildlife. Although the Taylor Grazing Act of 1934 established some control over grazing practices for domestic livestock, wild horses are not regulated under this legislation. Wild horses use these areas year-long, thus the regulation of resource condition cannot be achieved, typically resulting in degradation and decreased functionality of wetlands and riparian zones.

Riparian areas tend to stay healthy when they remain in a vegetated state and are relatively undisturbed (Belsky et al 1999). Well-vegetated stream banks help to dissipate energy and reduce discharge velocities, allowing water to percolate into the soil, where it is stored for late season discharge and used by plants. Where vegetative cover is greatly reduced, stream bank stability is negatively impacted from the loss of vegetation and the associated root masses of those plants. In systems with excessive pressure, vegetation is often absent, bare ground is higher, and the soil compacted. These factors enable water to flow more quickly, resulting in erosion and decreased system functionality.

Environmental Affects

Alternative A-C

All action alternatives would result in identical impacts to wetlands and riparian zones. Impacts would likely be negligible relative to variations in the affected environment or would be of such short duration that they would not be measurable and would not remain any longer than the gather activities themselves. These effects include trampling of vegetation and alteration of sediments when wild horses cross streams or springs as they are herded to temporary gather sites. To avoid impacts potentially associated with the gather operation, temporary gather sites and holding facilities would not be located within riparian areas. Other effects would be related to wild horse population size. Use of riparian areas by wild horses during non-gather periods leads to utilization of riparian vegetation which is not regulated like use by livestock. This results in alteration of soil and hydrologic function from punching, shearing, and compaction of soft sediments. Loss of vegetation can also lead to increased erosion and, therefore, loss of riparian soils and organic material. All alternatives would aim to reduce the total number of horses in the HMA which would reduce utilization pressure at all wetland and riparian zones. Reduced pressure is anticipated to allow regeneration of riparian vegetation which would lead to improved system functionality over time.

Alternative D

Under this alternative, the wild horse population within the HMA would not be reduced. Increased competition at currently utilized wetland and riparian zones would lead to continued loss of vegetative, soil, and hydrologic functionality. Increasing horse numbers would likely result in individual horses traveling further in search of available water sources leading to an increased number of wetland and riparian zones being impacted by wild horse use.

3.2.8 Wilderness

The proposed project area includes approximately 166,000 acres of designated wilderness within the Black Rock Desert, North Jackson Mountains, and South Jackson Mountains Wilderness Areas. These wilderness areas were designated by the Black Rock Desert-High Rock Canyon-Emigrant Trails National Conservation Act of 2000 (NCA Act); which recognizes special features of the wilderness areas: wagon ruts, historic inscriptions, prehistoric and historic Native American sites, large natural potholes, threatened fish and sensitive plants, and a largely untouched emigrant trail view shed. The NCA Act additionally identifies the unique segments of the Northern Great Basin and its broad representation of land forms, plant, and animal species, including “free roaming horses and burros.”

The Wilderness Act of 1964 established a “National Wilderness Preservation System to be composed of federally owned areas designated by Congress as "wilderness areas", these shall be administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness.” The Wilderness Act of 1964 mandates that Wilderness areas are managed in a manner that maintains or enhances the areas Wilderness Characteristics. Wilderness Characteristics include: untrammeled, natural,

undeveloped, and outstanding opportunities for solitude or a primitive and unconfined type of recreation.

Environmental Affects

Alternatives A-C
The action alternatives A-C include helicopter overflights under 300 feet to herd WH in areas that overlap with wilderness. All temporary trap sites are located outside of the wilderness boundaries. The Minimum Requirements Decision Guide (MRDG – Appendix P) identifies the use of helicopter overflights within wilderness as the minimum tools required to conduct the action alternatives A-C.

The Wilderness Act defines untrammeled as a place where ecological systems are unhindered and free from intentional actions of modern human control or manipulation. Herding WH within wilderness for capture is a trammeling activity, as it is a human manipulation of the natural processes or conditions that exist within the wilderness boundary. In this case, the presence of WH is the natural condition, as legislated by the Wild Free-Roaming Horses and Burros Act of 1971 (P.L. 92-195), and as a result of the presence of WH in the affected wilderness areas prior to their designation as wilderness. The action alternatives A-C would negatively impact the untrammeled quality of wilderness character because the action alternatives are a trammeling action as an anthropocentric management approach is being taken to manage WH populations.

No motorized vehicles, no landing of aircraft, and no temporary installments would be located within wilderness: therefore the undeveloped character of wilderness would not be affected.

The action alternatives A-C would impact the opportunity for solitude and primitive recreation during the gather activities, throughout the indefinite duration of this proposal. The impact to solitude or primitive and unconfined recreation are expected to occur as a result of the presence and noise of helicopter use for the duration of the gather. The entirety of the wilderness areas will not be impacted as the action is ephemeral by nature, though this quality of wilderness character would be impacted for the duration of gather and monitoring operations where the presence and sound of helicopter use is prevalent.

The action alternatives A-C aim to remove excess WH to reduce their population to the low level AML for the proposed area overlapping the wilderness. By removing the excess WH the natural quality of wilderness character may be preserved and enhanced by reducing the degradation due to excess animals within the wilderness. Removing the excess WH may reduce or eliminate the impact of excess animals competing with native wildlife for forage utilization, excess trampling of native vegetation and reduce trampling watersheds and other riparian areas within the wilderness areas.

Alternative D

The No Action Alternative would not result in impacts from gather operations. The opportunities for solitude and primitive recreation, untrammeled, and undeveloped qualities of wilderness

character would not be affected. However, the natural quality of wilderness character may be impacted. If the WH populations exceed their AML, the potential herd health and impacts to the landscape from excess WH may occur. Excess WH may compete with native populations of wildlife, overgraze riparian areas, and trample native vegetation at and near springs and other water sources. For these reasons, the natural quality of wilderness character would not be preserved and would potentially degrade.

3.3 Additional Affected Resources

In addition to the supplemental authorities above, the following resources may be affected by the Action Alternatives (Alternatives 1-4) and/or the No Action Alternative:

Table 3: Additional Affected Resources

OTHER RESOURCES	Present	Affected
Fisheries	YES	YES
Public Health & Safety	YES	YES
Rangeland Management	YES	YES
Recreation	YES	YES
Special Status Species	YES	YES
Soils	YES	YES
Vegetation	YES	YES
Wild Horse and Burro	YES	YES
Wilderness Study Area	NO	NO
Wildlife	YES	YES

3.3.1 Fisheries

Several of the streams in the Jackson Mountain range currently contain salmonid species, including Bottle Creek, Happy Creek, and Mary Sloan Creek. These streams include a variety of salmonids, such as, rainbow trout (*Oncorhynchus mykiss*), brook trout (*Salvelinus fontinalis*), tiger trout (*Salmo trutta* x *Salvelinus fontinalis*), and hybrid trout. Other streams within the Jackson Mountain range that are presently without fisheries are Big Creek, Deer Creek, and Trout Creek.

Grazing generally negatively affects water quality and fisheries. As more sediment enters the water from eroded and eroding stream banks and bottoms, the water warms, and certain species of fish, namely cold-water species such as trout, decline in number and biomass (Belsky et al 1999). Specifically, the effect on preferred cutthroat trout habitat is pronounced and negative, since preferred habitats with pools, overhead cover, and cut banks disappear and generally contain less available total biomass for fish in livestock-grazed riparian areas (Chapman and Knudsen 1980).

Environmental Impacts
Refer to sections 3.2.5 and 3.2.7 for more information on impacts to fishiers habitat associated with wild horses.

3.3.2 Public Health and Safety

In recent gathers, members of the public have increasingly traveled to the public lands to observe BLM's gather operations. Members of the public can inadvertently wander into areas that put them in the path of wild horses that are being herded or handled during the gather operations, creating the potential for injury to the wild horses or burros and to the BLM employees and contractors conducting the gather and/or handling the horses as well as to the public themselves. Because these horses are wild animals, there is always the potential for injury when individuals get too close or inadvertently get in the way of gather activities.

The helicopter work is done at various heights above the ground, from as little as 10-15 feet (when herding the animals the last short distance to the gather corral) to several hundred feet (when doing a recon of the area). While helicopters are highly maneuverable and the pilots are very skilled in their operation, unknown and unexpected obstacles in their path can impact their ability to react in time to avoid members of the public in their path. These same unknown and unexpected obstacles can impact the wild horses or burros being herded by the helicopter in that they may not be able to react and can be potentially harmed or caused to flee which can lead to injury and additional stress. When the helicopter is working close to the ground, the rotor wash of the helicopter is a safety concern by potentially causing loose vegetation, dirt, and other objects to fly through the air which can strike or land on anyone in close proximity as well as cause decreased vision. Though rare, helicopter crashes and hard landings can and have occurred (approximately 10) over the last 30+ years while conducting wild horse and burro gathers which necessitates the need to follow gather operations and visitor protocols at every wild horse and burro gather to assure safety of all people and animals involved. Flying debris caused by a helicopter incident poses a safety concern to BLM and contractor staff, visitors, and the wild horses and burros.

During the herding process, wild horses or burros will try to flee if they perceive that something or someone suddenly blocks or crosses their path. Fleeing horses can go through wire fences, traverse unstable terrain, and go through areas that they normally don't travel in order to get away, all of which can lead them to injure people by striking or trampling them if they are in the animal's path.

Disturbances in and around the gather and holding corral have the potential to injure the government and contractor staff who are trying to sort, move and care for the horses and burros by causing them to be kicked, struck, and possibly trampled by the animals trying to flee. Such disturbances also have the potential for similar harm to the public themselves.

Environmental Affects
Alternative A-C
The BLM is committed to allowing access by interested members of the public to the fullest possible degree without compromising safety or the success of operations. To minimize risks to

the public from helicopter operations, the gather Contractor is required to conduct all helicopter operations in a safe manner, and to comply with FAA regulations (FAR) 91.119 (14 CFR § 91.119) 4 and BLM IM No. 2010-164. Public observations sites would also be established in locations that reduce safety risks to the public (e.g., from helicopter-related debris or from the rare helicopter crash landing, or from the potential path of gathered horses), to the wild horses (e.g., by ensuring observers would not be in the line of vision of horses being moved to the gather site) and to contractors and BLM employees who must remain focused on the gather operations and the health and well-being of the wild horses. The Jackson Mountains Wild Horse Gather Observation Protocol found in Appendix B provides the public with the opportunity to safely observe the gather operations. Every attempt would be made to identify one or more observation sites at the gather location that offer good viewing opportunities, although there may be circumstances (flat terrain, limited vegetative cover, private lands, etc.) that require viewing locations to be at greater distances from the gather site to ensure safe gather operations or that preclude visitor access.

Alternative D
There would be no gather related safety concerns for BLM employees, contractors or the general public as no gather activities would occur.

3.3.3 Rangeland Management

The Bottle Creek, Deer Creek, Desert Valley, Happy Creek, Jackson Mountain and Wilder-Quinn Allotments are managed for livestock grazing but portions of these allotments also overlap with HMA boundaries and those overlapping areas are consequently managed concurrently for wild horses (with the exception of the Desert Valley Allotment).

There are a total of nine livestock operators (permittees) currently authorized to graze livestock in these allotments annually. The total permitted use for these permittees is a combined total of 32,744 Animal Unit Months (AUMs) yearly in the six allotments (including on non-HMA lands). An AUM is the amount of forage needed to sustain one cow or its equivalent for one month. All of these allotments consist of various pastures that are grazed seasonally following established grazing systems; however, the season of use may vary (by one to two weeks) annually based upon forage availability, drought conditions and other management criteria.

BLM issued FMUDs for five of these allotments in 1994, 1997, 1998, 1999 and 2000 following the analysis of monitoring data and a decision-making process that included public involvement and input. These FMUDs primarily modified livestock grazing systems, further defined AMLs for wild horses and identified allotment specific objectives and Standards for Rangeland Health. Livestock grazing systems have been further modified in some of these allotments subsequent to these FMUDs.

Vegetation and soils inventories were completed for the Bottle Creek, Deer Creek, Desert Valley, Happy Creek, and Jackson Mountain allotments as part of the Jackson Mountains AIM (Assessment Inventory and Monitoring) Pilot Project.

The PD MFP identified the level of livestock grazing authorized for the allotments within the gather area. Since that time there have been several management decisions that have guided the

multiple use management of the allotments in the gather area. The allotment specific FMUDs issued in the mid-nineties established the AML for wild horses in the allotments in the gather area.

Table 5 illustrates the livestock Animal Unit Months (AUMs) authorized by the MFPs in 1982 compared to the current authorized grazing use.
Monitoring reports can be referenced in Appendix L.

Table 4: Livestock Permitted AUMs

Allotment	1982 AUMs	2015 AUMs (WD RMP)	2021 Authorized AUMs (billed as of 6/11/2021)
Bottle Creek	N/A*	3,434	862
Deer Creek	754	754	452
Desert Valley	1,596	1,596	1,113
Happy Creek	3,724	3,721	1,250
Jackson Mountains	12,266	8,857	4,301
Wilder-Quinn	17,409	14,379	8,720
Totals	**35,749**	**32,741**	**16,698**

* *No data available for Allotment*

Table 6: Grazing Use (AUMs) by Year

Allotment	Actual Use 2017	Actual Use 2018	Actual Use 2019	Actual Use 2020	Authorized (Billed) Use 2021
Bottle Creek	3034	3555	3485	2685	2682
Deer Creek	610	698	779	643	452
Desert Valley	1336	1362	1384	1414	1414
Happy Creek	3705	3542	2559	1198	2499
Jackson Mountains	7466	6429	8379	8625	4,301
Wilder-Quinn	10711*	8306*	10738*	8930*	8817

*Billed Use
2021 Authorized use is not the full year (billed) as most of the WD is currently in a state of drought and livestock numbers are being adjusted accordingly through the year based on drought conditions.

Table 7: Livestock and WHB AUM Allocations on the Jackson Mountain HMA

Allotment	% of Allotment within HMA	Active Livestock AUMs	WHB AML Range	WHB AML Range Espressed in AUM	Current Estimated (adult) WHB Population	Current Estimated WHB use Expressed in AUMs
Bottle Creek	14%	3,434	12-20	144-240	46	552
Deer Creek	60%	754	6-10	72-120	12	144
Desert Valley	32%	1,596	0	0	10	120

Happy Creek	37%	3,724	36-60	432-720	88	1,056
Jackson Mountains	50%	8,857	70-117	840-1,404	862	10,344
Wilder-Quinn	>1%	14,379	6-10	72-120	0	0
Totals		**32,744**	**130-217**	**1,560-2,604**	**1,018**	**12,216**

Bottle Creek Allotment

The Jackson Mountain HMA lies within the Bottle Creek Allotment. The September 2000 FMUD allocated 3,434 AUMs to livestock and 144-240 AUMs to wild horses.

Deer Creek

Portions of the Jackson Mountain HMA lie within the Deer Creek Allotment. The October 1998 FMUD allocated 754 AUMs to livestock and 0 AUMs to wild horses; however, the FMUD does state under long term objectives: "Manage, maintain, and improve public rangeland conditions to provide forage for a viable population of horses." The actual number of livestock was decreased and the season of use and timeframes were adjusted to achieve short and long term objectives on the allotment.

Desert Valley

The Desert Valley Allotment AUMs were established by the 1982 PD MFP, allocating 1,560 AUMs to livestock and 0 AUMs to wild horses.

Happy Creek

The January 1994 FMUD reduced authorized livestock grazing, allocating 1,291 AUMs to livestock and 1,512 AUMs to wild horses. According to the 1994 FMUD the decision was made to reduce total AUMs on this allotment after the evaluation of monitoring data. This stocking rate was based upon monitoring and actual use data and the PD MFP.

Jackson Mountain

Prior to the May 1994 FMUD the active preference AUMs for livestock on the Jackson Mountain Allotment was 8,857 AUMs. The May 1994 FMUD reduced the active AUMs for livestock gradually to 6,403 AUMs over a planned five year period. The livestock operator appealed this decision which resulted in Settlement Agreement between the livestock operator and the BLM which negated the planned AUM reduction.

Under the 1994 FMUD 1,405 AUMs were allocated to wild horses. According to the 1994 FMUD if analysis of monitoring data were to show that the carrying capacity of the Allotment differs from the carrying capacity listed in the Decision, the available forage would be apportioned in the same proportions used in the decision (18% of available forage to wild horses, and 82% to livestock).

The bulk of the Jackson Mountains HMA is within the Jackson Mountains grazing allotment, and it is where the majority of the wild horses reside on a year round basis.

Wilder Quinn

The November 1998 FMUD authorized livestock grazing on the Wilder-Quinn Allotment for

livestock (sheep and cattle), allocating 14,379 AUMs to livestock and 120 AUMs to wild horses. Livestock water developments (e.g., wells, troughs and dirt reservoirs) authorized by the BLM are maintained under a cooperative agreement with the livestock permittees. These water developments are important sources of water for wild horses and wildlife as well as livestock. However, in the past these developed water sources have also been insufficient to maintain excess numbers of wild horses.

Environmental Affects

Alternatives A-C
There could be a short term impact to livestock due to gather activities if the operations disturb or disperse livestock. These impacts would be minor and short-term in nature.

The livestock are currently experiencing direct competition by wild horses for available forage and water, both within and outside the HMA boundaries in areas that are not designated for wild horse management. The impacts from the gather would increase forage availability and quality, reduce competition for water and forage between livestock and wild horses, and improve vegetative resources, thereby leading to a thriving natural ecological balance.

Alternative D
There would be no impacts to livestock from gather operations under the No Action alternative. Utilization by authorized livestock would continue to be impacted by the overpopulation of wild horses, both inside and outside the HMAs. The impacts of the No Action Alternative would consist of continued resource deterioration resulting from competition between wild horses and livestock for water and forage, reduced quantity and quality of forage, and undue hardship on the livestock operators, due to the inability to graze livestock on public lands within the grazing allotments as a result of competition for limited waters or the consumption by excess wild horses of forage allocated to livestock under the operative land-use plans and prior multiple use decisions.

3.3.4 Recreation

Recreation resources that exist in the area are mainly outdoor recreation, wildlife watching/photography, wild horse and burro watching/photography, rock hounding, off-highway vehicle use (outside of the wilderness area), and hunting for both large and small game. The area is a preferred site by visitors who enjoy wilderness areas and historic landmarks and mining sites. Use levels range from extremely low in winter, low to moderate in the summer, and peak in the fall during hunting seasons with season opening weekends having the highest visitation of the year.

The capture area includes two Nevada Department of Wildlife Hunt Units, (Units 034 & 035). The big game (California bighorn sheep, mule deer, and antelope). The upland game (blue and ruffed grouse, chukar, quail and Hungarian partridge) season is scheduled to begin the first week in August. The California Big Horn hunts September through October; and a large population of tags August to September for archery and October to Nobember for rifle.

Special Recreation Permit activities and events occur within the capture area, including but not limited to guided backpacking trips, and hunting outfitter and guide operations.

Environmental Affects

Alternative A-C

Activities associated with the wild horse gather would impact recreational opportunities, dates of the initial gather and future gathers would determine the amount of impact to visitors as use levels range from extremely low in winter, low to moderate in the summer, and peak in the fall during hunting seasons with season opening weekends having the highest visitation of the year. Hunters would be impacted by wildlife movements if the gather occurs during their hunts.

Recreationists in the wilderness areas wanting the opportunities of solitude and naturalness would be affected during helicopters herding activities. Individuals wanting to view/photograph wild horses would also be impacted by the gather since horses would have a heightened response to human presence following the gather and might be more difficult to observe for a period following the gather. Even though the density of wild horses in the area would be reduced, it would still be possible to view/photograph wild horses.

Alternative D

No impacts would occur under this alternative. However, without a gather to remove excess wild horses, recreational values would continue to be impacted since the overpopulation of wild horses results in competition with wildlife for resources, which in turn reduces hunting opportunities.

3.3.5 Soils

A wide range of soils occur within the gather area, ranging from deep saline-alkaline soils associated with valley bottoms, to shallow loamy soils at higher elevations in the mountain ranges. Soil development generally occurred under low precipitation regimes resulting in relatively slow development of soils.

Aerial monitoring indicates increasingly heavy trailing by wild horses and burros between limited water sources and foraging areas. Trailing and hoof action by wild horses and burros has the potential to accelerate erosion following intense summer convection storms or rapid snow melt through increased soil compaction and associated losses of vegetative cover. Extensive wild horse and burro utilization and trailing are occurring in the HMA and are decreasing vegetative cover while altering vegetative composition, particularly in areas of water sources. Changes in vegetative composition can reduce soil infiltration rates, which increases run off and consequently soil erosion, as well as decreased soil productivity.

Environmental Affects

Alternative A-C

Trailing and hoof action by wild horses and would be expected to decrease due to the decrease in wild horse population levels within the HMA. This would lead to increased soil functionality and increased soil processing resulting in increased soil development, while decreasing potential erosion and soil loss.

Alternative D

The no action alternative would result in the continuation of erosion due to the trailing and hoof action by an over population of wild horses. Compaction and soil loss are likely to accelerate as wild horse populations continue to grow.

3.3.6 Special Status Species

The potential for special status species (SSS) to occur in the assessment area was determined by reviewing the Sensitive Species List for Nevada (updated November 22, 2017) and reviewing existing data sources of known occurrences and suitable habitat. The species listed in Appendix H are known to occur or have the potential to occur within the assessment area based on a search of the NNHP database (2021), NDOW diversity database (2021), and knowledge of the area. Other special status species may be present in the assessment area if suitable habitat exists.

Sensitive Species
*(*Sensitive Species*)

Intermountain Cold Desert Scrub
The Intermountain Cold Desert Shrub type is the most extensive habitat type in the state of Nevada and within the Complex (WAPT 2012). "Community composition is largely influenced by soil salinity and drainage. Most often, the salt desert shrub type is dominated by either shadscale or greasewood. At the lowest flats of the valleys where soils drain poorest and salinities are highest, the most salt-tolerant plants are found, including pickleweed and quailbush. The salt desert shrub type generally gives way to sagebrush somewhere near the tops of the alluvial fans where the primary fault lines of the mountain range are situated. These upper soils are often gravelly and well-drained, and are more likely to support spiny hopsage, bud sagebrush, and associated plants. The dominant grass species in the salt desert shrub type is Indian ricegrass, and to a lesser extent, needle-and-thread grass" (WAPT 2012). Bald Eagles*, Golden Eagles*, and Prairie Falcons* are some of the sensitive raptor species that feed on prey populations found within this habitat type. Intermountain Cold Desert Shrub habitat provides nesting structure, protection from predators, and thermal cover for sensitive species such as Loggerhead Shrike*, Sage Sparrow*, Brewer's Sparrow*, and Sage Thrasher*. This habitat type also provides sandy soils for sensitive species to burrow and/or den in and rock features to provide protection from predators, including Burrowing Owl*, pale kangaroo mouse*, dark kangaroo mouse*, long-nosed leopard lizard*, and Great Basin collared lizard*.

Sagebrush
"In Nevada, eight species are predominantly dependent on sagebrush habitat for most of their life history needs: pygmy rabbit*, Great Basin pocket mouse, sagebrush vole, sagebrush lizard, Greater Sage-Grouse* (GRSG), Sage Thrasher*, Brewer's Sparrow*, and Sage Sparrow* (the last three also occur as breeding species in cold desert scrub, but to a much lesser degree)" (WAPT 2012). "Several species nest on habitats adjacent to sagebrush habitat, but spend most of their hunting time over sagebrush range where they primarily prey on ground squirrels and jack rabbits (e.g., Prairie Falcons* on cliffs and rimrock, and Ferruginous Hawks* on the pinyon-juniper edge or sometimes on rimrock)" (WAPT 2012). Additionally, Green-tailed Towhee are known to use sagebrush habitat for nesting and feeding.

"The GRSG is probably the species most extremely adapted to the use of sagebrush itself. GRSG are equipped with a specially-designed grinding organ that fuses the crop and the gizzard to address the difficult challenges of digesting sagebrush herbaceous matter. The year-round diet of

the adult GRSG consists of 98% sagebrush leaves, which gives the bird the ability to winter on sagebrush range" (WAPT 2012). The Complex contains key GRSG habitat including approximately 9,500 acres of summer habitat, 60,500 acres of nesting/early brood-rearing habitat, and 65,000 acres of winter habitat. Leks are communal breeding ground for GRSG and are commonly considered to be the center of nesting activity. There are seven (7) known leks within the HMA, of which, zero are known to be active.

GRSG habitat conservation efforts identified by the BLM Nevada and Northern California GRSG Approved Resource Management Plan Amendment (ARMPA) and Final Environmental Impact Statement (FEIS), Record of Decision signed September 22, 2015 guide management of GRSG habitat. The 2015 ARMPA was later revised and another ROD was signed March 15, 2019. Per the 2015 GRSG ARMPA there is approximately 13,000 acres of generally important habitat for GRSG, known as general habitat management area (GHMA), and 62,000 acres of habitat identified as other habitat management area (OHMA) within the HMA. Per the 2019 GRSG ARMPA, there is approximately 25,000 acres of GHMA, and 39,000 acres of OHMA within the Complex. See Maps 3 & 4 for GRSG habitat areas in and around the Complex, per the 2015 & 2019 GRSG ARMPAs (respectively). For the purposes of this document, impacts to GRSG habitat will be evaluated under the 2015 ARMPA and the 2019 GRSG ARMPA. See Appendix J for more information about the 2015 & 2019 GRSG ARMPAs.

Aspen Woodlands

"Aspen produce forage for both wildlife and domestic livestock. Healthy aspen communities consist of developed dense multi-age structure that provides benefits to wildlife dependent upon the diverse nature of these communities" (WAPT 2012). Aspen provide nesting structure, roosting, foraging, and escape cover for the Northern Goshawk*. The flammulated owl*, silver-haired bat*, and hoary bat* are supported by Aspen woodlands for forage, nesting, and protective cover. Cavities within aspen woodlands provide nesting, rosting, and insect prey base in dying trees to for several bat species such as the fringed myotis*, little brown myotis*, long-eared myotis*, and western small-footed myotis*. Downed wood "creates favorable conditions for Columbia spotted frogs (slow moving water*) as well as stores ground moisture and maintains mesic microsites (northern rubber boa*)" (WAPT 2012).

Intermountain Rivers & Streams

"More than 75% of the species in Nevada are strongly associated with riparian vegetation (U.S. General Accounting Office, 1993), including 80% of the birds (Dobkin, 1998). Almost all of these systems provide surface water for wildlife at some point in the year, and some provide critical year-round water" (WAPT 2012). Montane riparian areas associated with intermountain rivers and streams provide nesting structure, foraging, roosting, protection, and thermal cover for the Northern Goshawk*, Lewis's woodpecker*, and rufous hummingbird*. Lowland riparian areas support several sensitive species such as Bald Eagle*, burrowing owl*, Preble's shrew*, and LCT* (see section 3.2.5 for more information).

Springs & Springbrooks

"Springbrooks are the areas of flowing water linked to the spring source. Springs are generally divided into three main categories: cold springs (springs near or below mean annual air temperature), warm or thermal springs (springs 5 to 10°C (40 to 50°F) above mean annual air temperature), and hot springs (springs more than 10°C (50°F) above mean annual air

temperature)" (WAPT 2012). "Springs provide a vital water source between infrequent surface waters, providing water availability and food resources for a wide range of Nevada's wildlife, from bighorn sheep, elk, and deer; to birds and bats" (WAPT 2012). Cold springs provide habitat for Columbia spotted frog*, Northern leopard frog*, and western toad* within the Complex. Thermal warm and hot springs support endemic species such as the desert dace* (see Section 3.2.5 for more information) and several rare springsnail species* (*Pyrgalopsis*).

Environmental Affects

Alternatives 1-3

Impacts Common to Action Alternatives affecting sensitive wildlife species behavior may be disrupted due to noise from the low-flying helicopter and running wild horses during gather activities. There is the possibility of damage to SSS and their habitat due to trampling by WHB. These impacts are expected to be minimal, temporary, and short-term in nature. There is a possibility that SSS plants and less mobile animals would be trampled. Small areas of SSS habitat may be impacted by trampling at trap sites and holding facilities. This impact would be minimal (generally less than 0.5 acre/trap site), temporary, and short-term (two weeks or less) in nature.

Because of the known effects that overpopulated WHB herds can cause in rangeland ecosystems, overpopulated WHB herds are considered a threat to GRSG habitat quality, particularly in the species' western range (Beever and Aldridge 2011, USFWS 2013). The presence of WHB is associated with a reduced degree of GRSG lekking behavior (Muñoz et al. 2020). Moreover, increasing densities of WHB, measured as a percentage above AML, are associated with decreasing GRSG population sizes, measured by lek counts (Coates et al. 2021). Where WHB and GRSG co-occur, burros' year-round use of low-elevation habitats may lead to a high degree of overlap between burros and GRSG (Beever and Aldridge 2011). Sagebrush dependent species such as GRSG would benefit from increased cover and forage availability especially near riparian areas due to their nesting/brood-rearing needs. With the implementation of Required Design Features RDFs (see Appendix J), the potential impacts to lekking GRSG would be avoided. The implementation of RDFs would also prevent accumulation of anthropogenic waste (to prevent attracting predators of GRSG) and minimize disturbance to vegetation and soil by loading & unloading equipment on existing roads/disturbance.

While some WHB grazing may increase native plant diversity through presence of horse feces (which contains seeds, moisture, and nutrients), WHB grazing has also been documented to alter upland vegetation, increase bare ground and soil erosion potential, increase soil compaction and increase susceptibility to invasive plant species (Boyd et al., 2017, Ostermann-Kelm et al., 2009). The reduction in the current WHB populations would provide opportunity for vegetative communities to progress toward achieving a thriving natural ecological balance. The action alternatives would support a more diverse vegetative composition and structure through improvement and maintenance of healthy populations of native perennial plants. The reduction of WHB numbers would allow the habitat to restore to its natural condition and to support the SSS that rely on those vegetation communities.

Decreased WHB levels would reduce conflicts between WHB and wildlife at limited water sources (Hall et al., 2016, Boyd et al., 2017). Reduced use of vegetation would result in

increased plant vigor, production, seedling establishment, and ecological health of important wildlife habitat. SSS that rely on riparian habitat (intermountain rivers/streams and springs) would be expected to directly benefit from an increase in forage availability, vegetation density, structure, and cover.

Impacts from Alternative 4 (No Action)
Although there would be no direct impacts expected under this alternative, there would be continuing or increasing impacts due to overpopulated WHB. Maintaining or increasing the current numbers of excess WHB within the Complex, augmented by yearly population growth, would result in continued impacts to SSS populations and habitats. WHB populations would be expected to increase every year. Competion between SSS and WHB would be expected to continue and the associated decrease in herbaceous vegetation would reduce SSS forage availability and quality. SSS habitat would also continue to be impacted by the physical action of WHB utilization; habitats associated with wetland and riparian areas (including GRSG nesting/brood-rearing habitats) would continue to degrade due to removal of residual stubble height and soil compaction, leading to increased disturbance and levels of bare ground (Hall et al., 2016). Increasing WHB populations would increase use around riparian areas and associated trampling, thereby degrading riparian habitats and the important functions these sites for SSS.

3.3.7 Vegetation

The vegetation of the Jackson Mountain HMA varies from salt desert shrub communities at lower elevations, to low and big sagebrush/grass communities at higher elevations. The lower elevations are comprised of salt tolerant plants such as bud sagebrush (*Picrothamnus desertorum*), shadscale (*Atriplex confertifolia*) and, Bailey's and black greasewood (*Sarcobatus spp.*). Mid-elevations and alluvial fans consist of Wyoming big sagebrush (*Artemisia tridentate wyomingensis*) or low sagebrush (*Artemisia arbuscula*), with an understory of Sandberg's bluegrass (*Poa secunda*), bottlebrush squirreltail (Elymus elymoides), and Thurber's needlegrass (*Achnatherum thurberianum*). Within the mid and higher elevations, there is an occurrence of Utah juniper (*Juniperus osteosperma*). The higher elevation sites are comprised of mountain big sagebrush (*Artemisia tridentate vaseyana*), bluebunch wheatgrass (*Pseudoroegneria spicata*), Idaho fescue (*Festuca idahoensis*), and also support mountain browse species that include serviceberry (*Amelanchier spp.*), snowberry (*Symphoriocarpos spp.*), and currant (*Ribes spp.*). Riparian areas at mid to higher elevations support quaking aspen (*Populus tremuloides*), cottonwood (*Populus sp.*), and willows (*Salix spp*). Disturbed areas within and around the Jackson Mountains HMA support primarily cheat grass, a non-native invasive plant.

Increasing wild horse utilization and trailing due to increasing numbers is occurring in the HMA and is reducing vegetative cover and vigor, particularly, in those areas immediately adjacent to water sources. The reduction of vegetative cover and increased trampling resulting from higher wild horse numbers has led to increased soil compaction, which negatively impacts the establishment and root abilities of native vegetation. Changes to vegetation can also potentially accelerate run off and subsequent soil erosion.

The relative quantity of vegetative cover removed by grazing and trampling also affects soil properties. In general, vegetative cover provides shading for soils, which increases their ability to retain moisture, reduces soil erosion by intercepting precipitation and reducing surface wind

velocities, and provides organic input into the soil (Beever and Herrick 2006).

Environmental Affects

Alternative A-C

Impacts associated with the action alternatives would consist of disturbance to soil surfaces and vegetation immediately in and around the temporary gather site(s) and holding facilities. Impacts would be created by vehicle traffic and hoof action as a result of concentrating horses, and could be locally high in the immediate vicinity of the gather site(s) and holding facilities. Generally, these sites would be small (generally less than 0.5 acre/trap site) in size. Any impacts would remain site specific and isolated in nature. Impacts would be minimal as herding would have a short-term duration.

In addition, most gather sites and holding facilities would be selected to enable easy access by transportation vehicles and logistical support equipment. Normally, these gather sites are located near or on roads, pullouts, water haul sites or other flat areas, which have been previously disturbed. These common practices would minimize the potential impacts to soils and the associated native vegetative communities.

The action alternatives will reduce the WHB populations to within the established AML resulting in decreased pressure on vegetative resources within the uplands and riparian areas. This will allow for native species recovery, resulting in a lesser likelihood of invasive species and improve riparian and upland functionality within the HMA.

Impacts of implementing the action alternatives would be reduced concentrations of wild horses, leading to reduced soil erosion, vegetation trampling, and utilization of areas most frequented in this HMA by wild horses. This reduction in soil erosion would be most notable and important in the vicinity of small spring meadows and water developments experiencing high levels of disturbance and bare ground from the current excess numbers of wild horses.

Alternative D

In the absence of a wild horse gather, soil loss from wind and water vulnerability to erosion, particularly in the vicinity of small spring meadows and water developments, would be expected to accelerate. The increasing over-utilization of vegetation and heavy trailing due to an over-population of wild horses, would continue the loss of native perennial bunchgrasses, forbs and shrubs exposing larger areas to potential soil loss.

3.3.8 Wild Horses

Affected Environment

Wild horses are the descendants of domesticated horses that were introduced to North America. Wild horse populations may grow at 15-20 percent per year (NAS 2013, Ransom et al. 2016), and predation does not typically prevent populations from growing. Maintaining a herd within an AML requires removing animals in roundups, also known as gathers, and may require management actions that limit population growth rates (NAS 2013). Wild horse herds compete with native wildlife for forage and water resources (reviewed in Crist et al. 2019). Since 2010, population inventory flights have been conducted every two to three years. These population

inventory flights have provided information about population numbers, foaling rates, spatial distribution, and herd health. A population inventory was conducted in June 2020 using the simultaneous double-observer method (Griffin et al. 2020). The current estimated wild horse population of 1,018 wild horses is based on estimates from that survey (Lubow 2020), and projected herd growth since that time, and is now (March 2021) approximately 6.5 times greater than the low range of AML.

Monitoring data shows that wild horses are having negative impacts on rangeland health conditions. The results of key species utilization monitoring reveal severe to heavy use throughout the HMA and areas outside the HMA boundary (40% of Key Areas) – including in areas where there has been no cattle grazing. Few key areas (< 20%) had light to slight use. Wild horses have been a contributing factor to riparian areas having been documented as not meeting PFC and MIM and are at risk with a downward trend or are non-functional. See Appendix L for monitoring data.

Diet/dietary Overlap with Other Species

Numerous studies identify dietary overlap of preferred forage species and habitat preference between horses, cattle, and wildlife species in the Great Basin ecosystems for all seasons (Ganskopp 1983; Gandskopp et al. 1986, 1987; McInnis 1984; McInnis 1987; Smith et al 1982; Vavra and Sneva 1987). A strong potential exists for exploitative competition between horses and cattle under conditions of limited forage (water and space) availability (McInnis et al. 1987).

Although horses and cattle are often compared as grazers, horses can be more destructive to the range than cattle due to their differing digestive systems and grazing habits. The dietary overlap between wild horses and cattle is much higher than with wildlife, and averages between 60 and 80% (Hubbard and Hansen 1976, Hansen et al. 1977, Hanley 1982, Krysl et al. 1984, McInnis and Vavra 1987). Horses are cecal digesters while most other ungulates including cattle, pronghorn, and others are ruminants (Hanley and Hanley 1982, Beever 2003). Cecal digesters do not ruminate, or have to regurgitate and repeat the cycle of chewing until edible particles of plant fiber are small enough for their digestive system. Ruminants, especially cattle, must graze selectively, searching out digestible tissue (Olsen and Hansen 1977). Horses, however, are one of the least selective grazers in the West because they can consume high fiber foods and digest larger food fragments (Hanley and Hanley 1982, Beever 2003).

Wild horses can exploit the high cellulose of graminoids, or grasses, which have been observed to make up over 88% of their diet (McInnis and Vavra 1987, Hanley 1982) but shrubs – including sagebrush – can represent a large part of a horse's diet, at least in summer in the Great Basin (Nordquist 2011). However, this lower quality diet requires that horses consume 20-65% more forage than a cow of equal body mass (Hanley 1982, Menard et al. 2002). With more flexible lips and upper front incisors, both features that cattle do not have, wild horses trim vegetation more closely to the ground (Symanski 1994, Menard et al. 2002, Beever 2003). As a result, areas grazed by horses may retain fewer plant species and may be subject to higher utilization levels than areas grazed by cattle or other ungulates.

As a result of the potential for wild horse populations to grow rapidly, impacts from wild horses on water, soil, vegetation, and native wildlife resources (Davies and Boyd 2019) can increase

exponentially unless there is active management to limit their population sizes.Horses can compete with managed livestock in forage selected (Scasta et al. 2016). For the majority of wild horse herds, there is little overall evidence that population growth is significantly affected by predation (NAS 2013), although wild horse herd growth rates may be somewhat reduced by predation in some localized areas, particularly where individual cougars specialize on horse predation (Turner and Morrison 2001, Roelle et al. 2010). Andreasen et al. (2021) recently found that some mountain lions (*Puma concolor*) prey on young horses, particularly where horses are at very high densities and native ungulates are at very low densities. The greatest rate of predation on horses was in the Virginia Range, where the state of Nevada manages a herd of feral horses that is not federally protected. Where lion predation on horses was common, Andreasen et al. (2021) found that female lions preyed on horses year round, but 13% or fewer of horses killed by lions were adults. BLM does not have the legal authority to regulate or manage mountain lion populations, and it is not clear whether there are any mountain lions in the Jackson Mountain HMA that specialize on horse predation. Andresen et al. (2021) concluded that "At landscape scales, cougar predation is unlikely to limit the growth of feral horse populations." Given the recent history of consistent agrowth in the Jackson Mountains HMA wild horse herd, as documented by repeated aerial survey, the inference that predation does not limit local wild horse herd growth rates apparently applies.

The USFWS (2008), Beever and Aldridge (2011), Chambers et al (2017) and Crist et al. (2019) summarize much of the literature that quantifies direct ecosystem effects of wild horse presence. Beever and Aldridge (2011) present a conceptual model that illustrates the effects of wild horses on sagebrush ecosystems. In the Great Basin, areas without wild horses had greater shrub cover, plant cover, species richness, native plant cover, and overall plant biomass, and less cover percentage of grazing-tolerant, unpalatable, and invasive plant species, including cheatgrass, compared to areas with horses. Grazing by wild horses can have severe impacts on water source quality, aquatic ecosystems and riparian communities as well (Beever and Brussard 2000; Barnett 2002; Nordquist 2011; USFWS 2008; Earnst et al. 2012; USFWS 2012, Kaweck et al. 2018), sometimes excluding native ungulates from water sources (Ostermann-Kelm et al. 2008; USFWS 2008; Perry et al. 2015; Hall et al. 2016; Gooch et al. 2017; Hall et al. 2018). Impacts to riparian vegetation per individual wild horse can exceed impacts per individual domestic cow (Kaweck et al. 2018). A potential benefit of a horse's digestive system may come from seeds passing through system without being digested but the benefit is likely minimal. Wild horses can spread nonnative plant species, including cheatgrass (King et al. 2019), and may limit the effectiveness of habitat restoration projects. Horses require access to large amounts of water; an individual can drink an average of 7.4 gallons of water per day (Groenendyk et al. 1988). Despite a general preference for habitats near water (e.g., Crane et al. 1997), wild horses will routinely commute long distances (e.g., 10+ miles per day) between water sources and palatable vegetation (Hampson et al. 2010). During periods of increased temperature and decreased precipitation, horses monopolized access to water sources, leaving limited time for other species; this raises concerns about resource availability for native wildlife in water-limited environments (Hall et al. 2016)

Wild horses and burros may have ecologically beneficial effects, especially when herd sizes are low relative to available natural resources, but those ecological benefits do not typically outweigh damage caused when herd sizes are high, relative to available natural resources. Under

some conditions, there may not be observable competition with other ungulate species for water (e.g., Meeker 1979), but recent studies that used remote cameras have found wild horses excluding native wildlife from water sources under conditions of relative water scarcity (Perry et al. 2015, Hall et al. 2016, Hall et al. 2018). Wild burros (and, less frequently, wild horses) have been observed digging 'wells;' such digging may improve habitat conditions for some vertebrate species and, in one site, may improve tree seedling survival (Lundgren et al. 2021). This behavior has been observed in intermittent stream beds where subsurface water is within 2 meters of the surface (Lundgren et al. 2021). The BLM is not aware of published studies that document wild horses or burros in the western United States causing similar or widespread habitat amelioration on drier upland habitats such as sagebrush, grasslands, or pinyon-juniper woodlands. Lundgren et al. (2021) suggested that, due to well-digging in ephemeral streambeds, wild burros (and horses) could be considered 'ecosystem engineers;' a term for species that modify resource availability for other species (Jones et al. 1994). Bleich et al. (2021) responded by pointing out that ecological benefits from wild horse and burro presence must be weighted against ecological damage they can cause, especially at high densities. In HMAs where wild horse and burro biomass is very large relative to the biomass of native ungulates (Boyce and McLoughlin 2021), they should probably also be considered 'dominant species' (Power and Mills 1995) whose ecological influences result from their prevalence on the landscape. Wild horse densities could be maintained at high levels in part because artificial selection for early or extended reproduction may mean that wild horse population dynamics are not constrained in the same way as large herbivores that were never domesticated (Boyce and McLoughlin 2021). Another potentially positive ecological effect of wild horses and burros is that they, like all large herbivores, redistribute organic matter and nutrients in dung piles (i.e., King and Gurnell 2007), which could disperse and improve germination of undigested seeds. This could be beneficial if the animals spread viable native plant seeds, but could have negative consequences if the animals spread viable seeds of invasive plants such as cheatgrass (i.e,, Loydi and Zalba 2009, King et al. 2019). Increased wild horse and burro density would be expected to increase the spatial extent and frequency of seed dispersal, whether the seeds distributed are desirable or undesirable. As is true of herbivory by any grazing animals, light grazing can increase rates of nutrient cycling (Manley et al. 1995) and foster compensatory growth in grazed plants which may stimulate root growth (Osterheld and McNaughton 1991, Schuman et al. 1999) and, potentially, an increase in carbon sequestration in the soil (i.e., Derner and Schuman 2007, He et al. 2011). However, when grazer density is high relative to available forage resources, overgrazing by any species can lead to long-term reductions in plant productivity, including decreased root biomass (Herbel 1982, Williams et al. 1968) and potential reduction of stored carbon in soil horizons. Recognizing the potential beneficial effects of low-density wild horse and burro herds, but also recognizing the totality of available published studies documented ecological effects of wild horse and burro herds, especially when above AML (as noted elsewhere), it is prudent to conclude that horse and burro herd sizes above AML may cause levels of disturbance that reduce landscapes' capacity for resilience in the face of further disturbance, such as is posed by extreme weather events and other consequences of climate change.

Population modeling was completed for the Jackson Mountains HMA using Version 3.2 of the WinEquus population (Jenkins 1996) to analyze how the alternatives would affect the wild horse population. This modeling analyzed removal of excess wild horses with no fertility control, as compared to removal of excess wild horses with fertility control for released horses. The No

Action (no removal) Alternative was also modeled. One objective of the modeling was to identify whether any of the alternatives "crash" the population or cause extremely low population numbers or growth rates. Minimum population levels and growth rates were found to be within acceptable ranges, and above levels that would be grounds for concern; adverse impacts to the population that might cause the herd to no longer be self-sustaining are not likely under any of Alternatives 1-4. Graphic and tabular results are also displayed in detail in Appendix G.

Impacts common to Action Alternatives A-C

Helicopter/Bait and water trap impacts to wild horses

Impacts can occur to horses after the initial stress event (capture) and include increased social displacement or increased conflict between studs. These impacts are known to occur intermittently during wild horse gather operations. Traumatic injuries could occur and typically involve biting and /or kicking bruises. Horses may potentially strike or kick gates, panels or the working chute while in corrals or trap which may cause injuries. Lowered competition for forage and water resources would reduce stress and fighting for limited resources (water and forage) and promote healthier animals. Indirect individual impacts are those impacts which occur to individual wild horses after the initial stress event, and may include spontaneous abortions in mares. These impacts, like direct individual impacts, are known to occur intermittently during wild horse gather operations. An example of an indirect individual impact would be the brief skirmish which occurs among studs following sorting and release into the stud pen, which lasts less than a few minutes and ends when one stud retreats. Traumatic injuries usually do not result from these conflicts. These injuries typically involve a bite and/or kicking with bruises which don't break the skin. Like direct individual impacts, the frequency of occurrence of these impacts among a population varies with the individual animal.

Spontaneous abortion events among pregnant mares following capture is also rare, though poor body condition at time of gather can increase the incidence of spontaneous abortions. Given the two different capture methods proposed, spontaneous abortion is not considered to be an issue for either of the two proposed capture methods, since helicopter/drive trap method would not be utilized during peak foaling season (March 1 thru June 30), unless an emergency exists, and the water/bait trapping method is anticipated to be low stress.

Foals are often gathered that were orphaned on the range (prior to the gather) because the mother rejected it or died. These foals are usually in poor, unthrifty condition. Orphans encountered during gathers are cared for promptly and rarely die or have to be euthanized. It is unlikely that orphan foals would be encountered since majority of the foals would be old enough to travel with the group of wild horses. Also, depending on the time of year, the age of any foals at the time would be six to nine months of age and may have already been weaned by their mothers.

Gathering wild horses during the summer months can potentially cause heat stress. Gathering wild horses during the fall/winter months reduces risk of heat stress, although this can occur during any gather, especially in older or weaker animals. Adherence to the SOPs and techniques used by the gather contractor or BLM staff would help minimize the risks of heat stress. Heat stress does not occur often, but if it does, death can result. Most temperature related issues during

a gather can be mitigated by adjusting daily gather times to avoid the extreme hot or cold periods of the day. The BLM and the contractor would be pro-active in controlling dust in and around the holding facility and the gather corrals to limit the horses' exposure to dust.

The BLM has been gathering excess wild horses from public lands since 1975, and has been using helicopters for such gathers since the late 1970's. Refer to Appendix A for information on the methods that are utilized to reduce injury or stress to wild horses during gathers.

Since 2006, BLM Nevada has gathered over 40,000 excess animals. Of these, gather related mortality has averaged only 0.5%, which is very low when handling wild animals (GAO 2008, Scasta 2019). Another 0.6% of the animals captured were humanely euthanized due to pre-existing conditions and in accordance with BLM policy. This data affirms that the use of helicopters and motorized vehicles are a safe, humane, effective and practical means for gathering and removing excess wild horses and burros from the range. For animals left on the range after gather activities, transient changes in social relations may result from gathers, but these do not fundamentally change the social structure of wild horses, which tend to live in bands of several mares and their offspring with one or more mature stallions. Hansen and Mosley (2000) concluded that gather activities had no effect on observed wild horse foraging or social behaviors, in terms of time spent resting, feeding, vigilant, traveling, or engaged in agonistic encounters. BLM policy prohibits gathering wild horses with a helicopter (unless under emergency conditions) during the period of March 1 to June 30 which includes and covers the six weeks that precede and follow the peak of foaling period (mid-April to mid-May).

Through the capture and sorting process, wild horses are examined for health, injury and other defects. Decisions to humanely euthanize animals in field situations would be made in conformance with BLM policy. BLM Euthanasia Policy PIM 2021-007 is used as a guide to determine if animals meet the criteria and should be euthanized. Animals that are euthanized for non-gather related reasons include those with old injuries (broken hip, leg) that have caused the animal to suffer from pain or which prevent them from being able to travel or maintain body condition: old animals that have lived a successful life on the range, but now have few teeth remaining, are in poor body condition, or are weak from old age; and wild horses that have congenital (genetic) or serious physical defects such as club foot, or sway back and should not be returned to the range.

Temporary Holding Facilities During Gathers

Wild horses gathered would be transported from the trap sites to a temporary holding corral within the gather area in goose-neck trailers or straight-deck semi-tractor trailers. At the temporary holding corral, the wild horses would be aged and sorted into different pens based on sex. The horses would be provided ample supply of good quality hay and water. Mares and their un-weaned foals would be kept in pens together. All horses identified for retention in the HMA would be penned separately from those animals identified for removal as excess. All mares identified for release would be treated with fertility control vaccine in accordance with the Standard Operating Procedures (SOPs) for Fertility Control Implementation in Appendix C.

At the temporary holding facility, a veterinarian, would provide recommendations to the BLM regarding care, treatment, and if necessary, euthanasia of the recently captured wild horses. Any

animals affected by a chronic or incurable disease, injury, lameness or serious physical defect (such as severe tooth loss or wear, club foot, and other severe congenital abnormalities) would be humanely euthanized consistent with BLM PIM 2021-007, using methods acceptable to the American Veterinary Medical Association (AVMA).

Transport, Short Term Holding, and Adoption Preparation
Wild horses removed from the range as excess would be transported to the receiving short-term holding facility in a goose-neck stock trailer or straight-deck semi-tractor trailers. Trucks and trailers used to haul the wild horses would be inspected prior to use to ensure wild horses can be safely transported and that the interior of the vehicle is in a sanitary condition. Wild horses would be segregated by age and sex when possible and loaded into separate compartments. Mares and their un-weaned foals may be shipped together. Transportation of recently captured wild horses is limited to a maximum of 10 hours. During transport, potential impacts to individual horses can include stress, as well as slipping, falling, kicking, biting, or being stepped on by another animal. Unless wild horses are in extremely poor condition, it is rare for an animal to die during transport.

Upon arrival, recently captured wild horses are off-loaded by compartment and placed in holding pens where they are fed good quality hay and water. Most wild horses begin to eat and drink immediately and adjust rapidly to their new situation. At the short-term holding facility, a veterinarian provides recommendations to the BLM regarding care, treatment, and if necessary, euthanasia of the recently captured wild horses. Any animals affected by a chronic or incurable disease, injury, lameness or serious physical defect (such as severe tooth loss or wear, club foot, and other severe congenital abnormalities) that was not diagnosed previously at the temporary holding corrals at the gather site would be humanely euthanized using methods acceptable to the AVMA. Wild horses in very thin condition or animals with injuries are sorted and placed in hospital pens, fed separately and/or treated for their injuries. Recently captured wild horses, generally mares, in very thin condition may have difficulty transitioning to feed. A small percentage of animals can die during this transition; however, some of these animals are in such poor condition that it is unlikely they would have survived if left on the range.

After recently captured wild horses have transitioned to their new environment, they are prepared for adoption or sale. Preparation involves freeze-marking the animals with a unique identification number, microchipping, vaccination against common diseases, castration, and de-worming. During the preparation process, potential impacts to wild horses are similar to those that can occur during transport. Injury or mortality during the preparation process is low, but can occur.

Mortality at ORC facilities averages approximately 5% (GAO 2008), and includes animals euthanized due to a pre-existing condition, animals in extremely poor condition, animals that are injured and would not recover, animals which are unable to transition to feed; and animals which die accidentally during sorting, handling, or preparation.

Adoption
Adoption applicants are required to have at least a 400 square foot corral with panels that are at least six feet tall. Applicants are required to provide adequate shelter, feed, and water. The BLM

retains title to the horse for one year and the horse and facilities are inspected. After one year, the applicant may take title to the horse at which point the horse become the property of the applicant. Adoptions are conducted in accordance with 43 CFR § Subpart 4750.

Sale with Limitation
Buyers must fill out an application and be pre-approved before they may buy a wild horse. A sale-eligible wild horse is any animal that is more than 10 years old; or has been offered unsuccessfully for adoption at least 3 times. The application also specifies that all buyers are not to sell to slaughter buyers or anyone who would sell the animals to a commercial processing plant. Sale of wild horses are conducted in accordance with the 1971 WFRHBA and congressional limitations that are presently in place.

Off-range Pastures
Most animals not immediately adopted or sold have been transported to Off-Range pastures in the Midwest given current Congressional prohibitions on selling excess animals without limitations, or on euthanizing healthy animals for which no adoption or sale demand exists as required by the WFRHBA.

Potential impacts to wild horses from transport to adoption, sale or Off-range Pastures (ORP) are similar to those previously described. One difference is that when shipping wild horses for adoption, sale or ORP, animals may be transported for a maximum of 24 hours. Immediately prior to transportation, and after every 24 hours of transportation, animals are offloaded and provided a minimum of 8 hours on-theground rest. During the rest period, each animal is provided access to unlimited amounts of clean water and 2 pounds of good quality hay per 100 pounds of body weight with adequate bunk space to allow all animals to eat at one time. The rest period may be waived in situations where the anticipated travel time exceeds the 24-hour limit but the stress of offloading and reloading is likely to be greater to the animals than the stress involved in the additional period of uninterrupted travel.

Off-range pastures are designed to provide excess wild horses with humane, and in some cases life-long care in a natural setting off the public rangelands. There wild horses are maintained in grassland pastures large enough to allow free-roaming behavior (i.e., the horses are not kept in corrals) and with the forage, water, and shelter necessary to sustain them in good condition. Approximately 38,000 wild horses that are in excess of the current adoption or sale demand (because of age or other factors such as economic recession), are currently located on private land pastures in Oklahoma, Kansas, South Dakota , Iowa, Missouri, Wyoming, Montana, Nebraska, Washington, and Utah. Establishment of an ORP is subject to a separate NEPA and decision-making process. Located primarily in mid or tall grass prairie regions of the United States, these ORPs are highly productive grasslands compared to the more arid western rangelands. These pastures comprise about 400,000 acres (an average of about 10-11 acres per animal). Of the animals currently located in ORP, less than one percent is age 0-4 years, 49 percent are age 5-10 years, and about 51 percent are age 11+ years.

Mares and sterilized stallions (geldings) are segregated into separate pastures. Although the animals are placed in ORP, they remain available for adoption or sale to qualified individuals; and foals born to pregnant mares in ORP are gathered and weaned when they reach about 8-12

months of age and are also made available for adoption. The ORP contracts specify the care that wild horses must receive to ensure they remain healthy and well-cared for. Handling by humans is minimized to the extent possible, although regular on-the-ground observation by the ORP contractor and periodic counts of the wild horses to ascertain their well-being and safety are conducted by BLM personnel and/or veterinarians. A very small percentage of the animals may be humanely euthanized if they are in very poor condition due to age or other factors. Natural mortality of wild horses in ORP averages approximately 8% per year, but can be higher or lower depending on the average age of the horses pastured there (GAO-09-77, Page 52). Wild horses residing on ORP facilities live longer, on the average, than wild horses residing on public rangelands,

Euthanasia and Sale Without Limitation
Under the WFRHBA, healthy excess wild horses can be euthanized or sold without limitation if there is no adoption demand for the animals. However, while euthanasia and sale without limitation are allowed under the statute, these activities have not been permitted under current Congressional appropriations for over a decade and are consequently inconsistent with BLM policy. If Congress should remove this prohibition, then excess horses removed from the HMA could potentially be sold without limitations or humanely euthanized, as required by statute, if no adoption or sale demand exists for some of the removed excess horses.

Wild Horses Remaining or Released into the HMA following Gather
Under the Proposed Action, the post-gather population of wild horses would be about 130 wild horses, which is the low end of the AML range. Reducing population size would also ensure that the remaining wild horses are healthy and vigorous, are not at risk of death or suffering from starvation due to insufficient habitat coupled with the effects of frequent drought (lack of forage and water), and that the population does not exceed AML between gathers.

The wild horses that are not captured may be temporarily disturbed and move into another area during the gather operations. With the exception of changes to herd demographics, direct population wide impacts have proven, over the last 20 years, to be temporary in nature with most if not all impacts disappearing within hours to several days of when wild horses are released back into the HMA. No observable effects associated with these impacts would be expected within one month of release, except for a heightened awareness of human presence.

As a result of lower density of wild horses across the Jackson Mountains HMA following the removal of excess horses, competition for resources would be reduced, allowing wild horses to utilize preferred, quality habitat. Confrontations between stallions would also become less frequent, as would fighting among wild horse bands at water sources. Achieving the AML and improving the overall health and fitness of wild horses could also increase foaling rates and foaling survival rates over the current conditions.

The primary effects to the wild horse population that would be directly related to this proposed gather would be to herd population dynamics, age structure or sex ratio, and subsequently to the growth rates and population size over time.

The remaining wild horses not captured would contribute to the resulting social structure and

herd demographics (including age and sex ratios, and survival and fertility rates). No observable effects to the remaining population associated with the gather impacts would be expected except a heightened shyness toward human contact.

Impacts to the rangeland as a result of the current overpopulation of wild horses would be reduced under the action alternatives. Fighting among stud horses would be expected to decrease since they would protect their position at water sources less frequently; injuries and death to all age classes of animals would also be expected to be reduced as competition for limited forage and water resources is decreased.

Individual impacts are those impacts which occur to individual wild horses after the initial stress event, and may include spontaneous abortions in mares, and increased social displacement and conflict in studs. These impacts, like direct individual impacts, are known to occur intermittently during wild horse gather operations. An example of an indirect individual impact would be the brief skirmish which occurs among older studs following sorting and release into the stud pen, which lasts less than two minutes and ends when one stud retreats. Traumatic injuries usually do not result from these conflicts. These injuries typically involve a bite and/or kicking with bruises which don't break the skin. Like direct individual impacts, the frequency of occurrence of these impacts among a population varies with the individual animal.

Spontaneous abortion events among pregnant mares following capture is also rare, though poor body condition can increase the incidence of such spontaneous abortions. Given the timing of this gather, spontaneous abortion is not considered to be an issue for the proposed gather.

Oftentimes, foals are gathered that were already orphans on the range (prior to the gather) because the mother rejected it or died. These foals are usually in poor, unthrifty condition. Orphans encountered during gathers are cared for promptly and rarely die or have to be euthanized.

Most foals that would be gathered would be over four months of age and some would be ready for weaning from their mothers. In private industry, domestic horses are normally weaned between four and six months of age.

Gathering the wild horses during the fall reduces risk of heat stress, although this can occur during any gather, regardless of season, especially in older or weaker animals. Adherence to the SOPs as well and techniques used by the gather contractor help minimize the risks of heat stress. Heat stress does not occur often, but if it does, death can result.

During summer gathers, roads and corrals may become dusty, depending upon the soils and specific conditions at the gather area. The BLM ensures that contractors mitigate any potential impacts from dust by slowing speeds on dusty roads and watering down corrals and alleyways. Despite precautions, it is possible for some animals to develop complications from dust inhalation and contract dust pneumonia. This is rare, and usually affects animals that are already weak or otherwise debilitated due to older age or poor body condition. Summer gathers pose increased risk of heat stress so Contractors use techniques that minimize heat stress, such as conducting gather activities in the early morning, when temperatures are coolest, and stopping

well before the hottest period of the day. The helicopter pilot also brings in the horses at an easy pace. If there are extreme heat conditions, gather activities are suspended during that time. Water consumption is monitored, and horses or burros are often lightly sprayed with water as the corrals are being sprayed to reduce dust. The wild horses and burros appear to enjoy the cool spray during summer gathers. Individual animals are also monitored and veterinary or supportive care administered as needed. Electrolytes can be administered to the drinking water during gathers that involve animals in weakened conditions or during summer gathers. Additionally, BLM Wild Horse and Burro staff maintains supplies of electrolyte paste if needed to directly administer to an affected animal. As a result of adherence to SOPs and care taken during summer gathers, potential risks to wild horses associated with summer gathers can be minimized or eliminated.

During winter gathers, wild horses and burros are often located in lower elevations, in less steep terrain due to snow cover in the higher elevations. Subsequently, the animals are closer to the potential gather corrals, and need to maneuver less difficult terrain in many cases. However, snow cover can increase fatigue and stress during winter gathers, therefore the helicopter pilot allows horses to travel slowly at their own pace. The Contractor may plow trails in the snow leading to the gather corrals to make it easier for animals to travel to the gather site and to ensure the wild horses can be safely gathered.

Through the capture and sorting process, wild horses are examined for health, injury and other defects. Decisions to humanely euthanize animals in field situations would be made in conformance with BLM policy. BLM Euthanasia Policy PIM- 2021-007 is used as a guide to determine if animals meet the criteria and should be euthanized (refer to SOPs Appendix A). Animals that are euthanized for non-gather related reasons include those with old injuries (broken hip, leg) that have caused the animal to suffer from pain or which prevent them from being able to travel or maintain body condition; old animals that have lived a successful life on the range, but now have few teeth remaining, are in poor body condition, or are weak from old age; and wild horses that have congenital (genetic) or serious physical defects such as club foot, or sway back and should not be returned to the range.

GPS Radio Collars and Tail Tags

To facilitate the BLM's monitoring of released wild horses, United States Geological Survey (USGS) staff may affix small, lightweight GPS radio transmitters (GPS tail tags) into the tails of wild horses of either sex, and / or fit GPS radio collars to wild mares, before such animals are released back to the HMA. This would be a part of BLM's wild horse monitoring. Telemetry-based monitoring (Schoenecker et al. 2020, King and Schoenecker in review) has been used in other HMAs to allow the Bureau of Land Management (BLM) to more easily observe the outcome of fertility control treatments, and to learn more about wild horse movement patterns. Such telemetry does not consititue a research project, but does allow for improved accuracy of monitoring to document the outcomes of BLM management actions. The primary motivations to conduct this non-destructive data collection activity would be, first, to monitor the outcome of fertility control treatments and, second, to learn more about wild horse movements in the area. Having tail tags or radio collars on mares will allow the BLM, or the USGS as a cooperating agency, to periodically locate the animals with telemetry and check whether they have a foal. The kind of detailed information about wild horse movements in the HMA that GPS telemetry

can provide is not currently available from opportunistic visual observations. The location data from the telemetry devices is expected to inform the BLM about locations and natural resources that the wild horses use throughout the year.

USGS would affix tags or collars on fewer than 100 horses over the 10-year period, with no more than 50 attached at a time. The tail-mounted GPS units (< 50 g) or GPS radio collars (< 1 kg) would be programmed to collect multiple locations per day. Both the collars and the tail-braid attachments are designed to prevent negative impacts to horse welfare and are expected to detach from the horse within 3 years. The collars have a longer expected duration of use, and would be more informative for fertility control monitoring. The tail tags have a more limited duration of use, but will increase the number of animals providing monitoring results for seasonal movements. Both collars and tail tags are solid-battery powered and will include a very-high frequency (VHF) transmitter to facilitate unit location and recovery. See Appendix K for further details on GPS collar and tag application, and periodic monitoring to ensure ongoing animal safety.

Genetic Diversity

It is not expected that observed heterozygosity would be greatly reduced by the Action Alternatives, and genetic monitoring would be used to identify any need for animal introductions that would increase genetic diversity in the HMA. Even if ¼ of mares at low AML are sterile (under the Preferred Alternative), the AML range of 130-217 wild horses in the Jackson Mountains HMA should provide for a relatively high genetic effective population size and correspondingly low rate of loss of observed heterozygosity that would be well below 1% per generation (after Frankham et al. 2010), which is a suggested level in the BLM WHB herd management handbook (2010). For most treated mares, currently available fertility control vaccines and IUDs are expected to be temporary contraceptives, relative to the long lifespan of a wild horse mare. Wild horse baseline genetic sampling occurred in the HMA in 2012; separate sample sets were collected from two subareas of the HMA, with 30 samples from the Bottle Creek subarea (Cothran 2013a) and 41 samples from the Jackson Mountains South subarea (Cothran 2013b). In those 2012 samples, observed heterozygosity was critically low; those values were a cause for concern at the time. Cothran (2013a, 2013b) suggested that the pattern of genetic diversity seen in the samples from the Bottle Creek subarea and South subarea suggested that each subarea may have had a time period when horses in those areas were relatively isolated, leading to some inbreeding, and he recommended augmenting each subarea with periodic introductions of new animals from other HMAs, or from the other subarea. Cothran noted that it was surprising that the observed heterozygosity levels were fairly low in the 2012 samples, considering the fairly large population size (Cothran 2013b). Cothran concluded that animals in the Bottle Creek subarea 2012 samples were "fairly distinct" from those of the South subarea; and that as a result animals from the Bottle Creek subarea might be good candidates for introduction to the South subarea (Cothran 2013b). Based on that conclusion, and on comparative patterns of allelic diversity (Table 1 in Cothran 2013a and Table 1 in 2013b) one may infer that, at the broader level of the HMA including both the Bottle Creek and South subareas, the collective herd within the entire HMA contains a greater degree of genetic diversity than was estimated for either subarea in isolation. However, the evidence at the time of the 2012 sampling indicated to Cothran that there was little movement or genetic exchange between those subareas then (Cothran 2013b). When a gather takes place under the Preferred Alternative,

sampling the hair follicles of captured animals will make it possible to determine whether the observed heterozygosity has improved since 2012. It is not clear whether there has been much mixing of animals from the subareas since that time. If contemporary genetic monitoring still revealed an unacceptably low level of observed heterozygosity, fertile animals from other HMAs could be introduced from other similar herds, in keeping with guidelines from the BLM WHB herd management handbook 4700 (BLM 2010).

Because of history, context, and periodic introductions, wild horses that live in the Jackson Mountains HMA should not be considered as truly isolated populations (NAS 2013). Rather, managed herds of wild horses should be considered as components of interacting metapopulations, connected by interchange of individuals and genes due to both natural and human-facilitated movements. These animals are likely to be part of part of a larger metapopulation (NAS 2013) that has demographic and genetic connections with other BLM-managed herds in Nevada, Oregon, California, and beyond. Specifically, the Jackson Mountain HMA is nearly contiguous with the Blue Wing / Seven Troughs complex of HMAs, and is approximately 25 miles East of the Black Rock Range HMA, although separated by the Black Rock desert. Notwithstanding Cothran's (2013a, 2013b) interpretion that the herd may have been genetically isolated prior to 2012 sampling, geography suggests that wild horses could move in and out of the Jackson Mountains HMA. Wild horse herds in the larger metapopulation have a background of diverse domestic breed heritage, probably caused by natural and intentional movements of animals between herds. Under all the action alternatives, hair samples would be collected during gathers, from at least 25 animals, to assess the genetic diversity in the HMA. Analysis would determine whether management is maintaining acceptable genetic diversity (and avoiding excessive risk of inbreeding depression). Under all action alternatives, wild horse introductions from other HMAs could be used if needed, to augment observed heterozygosity, which is a measure of genetic diversity, the result of which would be to reduce the risk of inbreeding-related health effects. Introducing a small number of fertile animals every generation (about every 8-10 years) is a standard management technique that can alleviate potential inbreeding concerns (BLM 2010).

It is possible for the Jackson Mountains HMA horses to have low observed heterozygosity (as was the case in the 2012 samples; Cothran 2013a, 2013b), yet to still be broadly related to a number of other BLM-managed herds across the west. Various evidence also suggests that the wild horses in the Jackson Mountains HMA are not genetically unusual, with respect to other wild horse herds. Cothran (2013a, 2013b) found that neither sample set contained any unique alleles. The samples from Bottle Creek subarea of the HMA were found to be most similar to sampled animals from Calico Mountain HMA and Granite Range HMA (Cothran 2013a), while samples from the South subarea were most similar to samples from Fish Crek HMA and Little Owyhee HMA (Cothran 2013b). This geographic diversity of HMAs which Jackson Mountain sampled horses were most similar to in 2012 provide circumstantial evidence supporting the interpretation that Jackson Mountains horses are components in a highly connected metapopulation that includes horse herds in many other HMAs. Also, the 2013 NAS report is a table showing the estimated 'fixation index' (Fst) values between 183 pairs of samples from wild horse herds. Fst is a measure of genetic differentiation. Low values of Fst indicate that a given pair of sampled herds has a shared genetic background. The lower the Fst value, the more genetically similar are the two sampled herds. Values of Fst under approximately 0.05 indicate

virtually no differentiation. Values of 0.10 indicate very little differentiation. Only if values are above about 0.15 are any two sampled subpopulations considered to have evidence of elevated differentiation (Frankham et al 2010). Fst values were not available in that 2013 NAS report for the Jackson Mountains HMA or for HMAs in the Blue Wing / Seven Troughs complex, but they were presented for the Black Rock Range East HMA and Black Rock Range West HMA, each of which were sampled in 2005, 2010, and 2011 (since that time, the Black Rock Range East and Black Rock Range West HMAs have been administratively combined into the Black Rock Range HMA). In all three sampled years, the Black Rock Range East HMA had pairwise Fst values that were less than 0.075 with 149 or more other sample sets. These results suggest that at least one herd that is fairly near the Jackson Mountains HMA was extremely similar to nearly four fifths of other BLM-managed herds.

Fertility Control

BLM has identified fertility control as a method that could be used to protect rangeland ecosystem health and to reduce the frequency of wild horse gathers and removals. Expanding the use of population growth suppression to slow population growth rates and reduce the number of animals removed from the range and sent to ORP is a BLM priority. The WFRHBA specifically provides for contraception (section 3.b.1). No finding of excess animals is required for BLM to pursue contraception in wild hosres. Please refer to appendix C for further detailed anyalsis on fertility control in wild horse management, and the effects of various methods.

Environmental Effects

Alternative A (Proposed Action)

The Proposed Action would remove excess wild horses within and outside the Jackson Mountains HMA boundary. Under this alternative, excess wild horses would be removed to the lower range of the AML. All wild horses residing outside the HMA would be removed. Fertility control vaccines and / or IUDs would be applied to all breeding age mares that are captured and released after low AML is achieved, except that up to approximately ¼ of the population of mares on the range at low AML for horses (i.e., about 13) may be sterilized through a minimally invasive procedure. Only non-pregnant mares would be considered for application of IUDs or minimally-invasive sterilization. Sex ratio manipulation would be used with wild horses so that, by turning back more males than females, the overall horse sex ratio would be no more than 60% male.

Successful implementation of this alternative requires a 90-95% gather efficiency in order to have enough animals in the initial gather available for release post-gather. Historically, gather efficiencies have averaged about 80% on this HMA; at this level of efficiency, all the wild horses gathered would need to be removed in order to restore population size to within the established AML. If gather efficiencies do not allow for the attainment of the chosen action the BRFO would return in two to three years from the initial gather to remove excess wild horses and apply fertility control treatments. This would allow the BRFO to achieve the desired goal or reaching the low range of AML as well as to gather a sufficient number of remaining horses to implement fertility control treatments to control population growth.

When gather efficiencies have been able to achieve horse numbers within the range of AML maintenance gathers to reapply fertility control and to remove adoptable wild horses would be conducted during the 10 years following the date of the initial gather. Mares selected for release would be treated with fertility control vaccines and/ or IUDs (except that up to ¼ of mares at low AML may be sterilized by minimally invasive procedure) and released back to the range. Vaccinations and IUDs would be applied in keeping with standard operating procedures (SOPs, Appendix C). Consideration of which animals are selected for release would reflect the objective of adjusting the overall horse sex ratio with 60% males 40% females. Mares and studs would be selected to maintain a diverse age structure, herd characteristics and conformation (body type).

Decreased competition for forage following removal of excess animals, coupled with reduced reproduction as a result of fertility control, should result in improved health and condition of mares and foals that remain on the range, and would maintain healthy range conditions over the longer-term. Additionally, reduced reproduction rates would be expected to extend the time interval between gathers and reduce disturbance to individual animals as well as herd social structure over the foreseeable future.

The removal of excess horses, and maintenance of the herd at AML would reduce damage to the range from the current overpopulation of wild horses and allow vegetation resources time to recover over the next 4-5 years. As a result, there would be fewer disturbances to individual animals and the herd, and a more stable wild horse social structure would be provided. Removal of excess wild horses would also improve herd health. Lower competition for forage and water resources would reduce stress and promote healthier animals.

All fertility control methods affect the behavior and physiology of treated animals (NAS 2013), and are associated with potential risks and benefits, including effects of handling, frequency of handling, physiological effects, behavioral effects, and reduced population growth rates (Hampton et al. 2015). Because applying fertility control vaccines or IUDs, or sterilizing animals, requires capturing and handling, the risks and costs associated with capture and handling of horses may be comparable to those of gathering for removal, but with expectedly lower adoption and long-term holding costs in the long term. Although fertility control vaccines can be applied remotely (via darting); that method was not considered to be a reliable enough method of delivery in the HMA (see ‘Alternatives Considered but Eliminated’).

In cases where a booster vaccine is required, mares could be held for approximately 30 days and given a booster shot prior to release. Over the course of multiple gathers over the 10-year time period, BLM would treat/retreat mares with fertility control to help meet herd management objectives. Since release of the 2013 NAS Report, the BLM has supported field trials of potential sterilization methods that may be used in WHB management, but inclusion of any particular method as a part of management does not depend on completion of any given research project. The use of any new fertility control method would conform to current best management practices at the direction of the National Wild Horse and Burro Program.

Fertility Control Vaccines

Immunocontraceptive Porcine Zona Pellucida (PZP) vaccines are currently being used on over 75 areas managed for wild horses by the National Park Service, US Forest Service, and the

Bureau of Land Management and its use is appropriate for free-ranging wild horse herds. A full review of PZP vaccines and their effects is in Appendix D. Taking into consideration available literature on the subject, the National Academies of Sciences concluded in their 2013 report that PZP vaccine was one of the preferred available methods for contraception in wild horses and burros (NAS 2013). PZP vaccine use can reduce or eliminate the need for gathers and removals (Turner et al. 1997). PZP vaccines meet most of the criteria that the NAS (2013) used to identify promising fertility control methods, in terms of delivery method, availability, efficacy, and side effects. It has been used extensively in wild horses (NAS 2013), and in a population of feral burros in territory of the US (Turner et al. 1996). PZP vaccine can be relatively inexpensive, meets BLM requirements for safety to mares and the environment, and is commercially produced as ZonaStat-H, an EPA-registered product (EPA 2012, SCC 2015), as PZP-22, which is a formulation of PZP in polymer pellets that can lead to a longer immune response (Turner et al. 2002, Rutberg et al. 2017, Carey et al. 2019), and as Spay-Vac (Roelle et al. 2017).

Under the Proposed Action, mares being treated with PZP vaccine for the first time would receive a liquid primer dose along with time release pellets. BLM would return to the HMA as needed to re-apply PZP-22 and/or ZonaStat-H and initiate new treatments in order to maintain contraceptive effectiveness in controlling population growth rates. Application methods could be by hand in a working chute during gathers, or through field darting if mares in some portions of the HMA prove to be approachable. Both forms of PZP can safely be reapplied as necessary to control the population growth rate. Even with repeated booster treatments of PZP, it is expected that most, if not all, mares would return to fertility, and not all mares would be treated or receive boosters within the HMA due to the sheer numbers of the population, the large size of the gather area and logistics of wild horse gathers. Once the population is at AML and population growth seems to be stabilized, BLM could use population planning software (i.e., PopEquus, currently in development by USGS Fort Collins Science Center) to refine estimates of the required frequency of re-treating mares with PZP or other fertility control methods.

The immune-contraceptive GonaCon-Equine vaccine meets most of the criteria that the National Research Council of the National Academy of Sciences (NAS 2013) used to identify the most promising fertility control methods, in terms of delivery method, availability, efficacy, and side effects. A full review of GonaCon and other GnRH vaccines and their effects is in Appendix D. GonaCon-Equine is approved for use by authorized federal, state, tribal, public and private personnel, for application to wild and feral equids in the United States (EPA 2013, 2015), and is being used in an increasing number of wild horse herds. This vaccine is not experimental, and its use is appropriate for free-ranging wild horse herds. Taking into consideration available literature on the subject, the National Research Council concluded in their 2013 report that GonaCon-B (which is produced under the trade name GonaCon-Equine for use in feral horses and burros) was one of the most preferable available methods for contraception in wild horses and burros (NAS 2013). GonaCon-Equine has been used on feral horses in Theodore Roosevelt National Park (Baker et al. 2018) and on a number of wild horses in HMAs within Nevada and ofhter states. GonaCon-Equine can be remotely administered in the field in cases where mares are relatively approachable, using a customized pneumatic dart (McCann et al. 2017). Use of remotely delivered (dart-delivered) vaccine is generally limited to populations where individual animals can be accurately identified and repeatedly approached within 50 meters or less (BLM 2010).

As with other contraceptives applied to wild horses, the long-term goal of GonaCon-Equine use is to reduce or eliminate the need for gathers and removals (NAS 2013). GonaCon-Equine vaccine is an EPA-approved pesticide (EPA, 2009a) that is relatively inexpensive, meets BLM requirements for safety to mares and the environment, and is produced in a USDA-APHIS laboratory. Its categorization as a pesticide is consistent with regulatory framework for controlling overpopulated vertebrate animals, and in no way is meant to convey that the vaccine is lethal; the intended effect of the vaccine is as a contraceptive. GonaCon is produced as a pharmaceutical-grade vaccine, including aseptic manufacturing technique to deliver a sterile vaccine product (Miller et al. 2013). If stored at 4° C, the shelf life is 6 months (Miller et al 2013). Miller et al. (2013) reviewed GonaCon environmental safety and toxicity. When advisories on the product label (EPA 2015) are followed, the product is safe for users and the environment (EPA 2009b). EPA waived a number of tests prior to registering the vaccine, because GonaCon was deemed to pose low risks to the environment, so long as the product label is followed (Wang-Cahill et al. in press).

Under the Proposed Action, the BLM would return to the HMA for additional gathers, as needed, to re-apply GonaCon-Equine and initiate new treatments in order to maintain contraceptive effectiveness in controlling population growth rates. Booster dose effects may lead to increased effectiveness of contraception, which is generally the intent. GonaCon-Equine can safely be reapplied as necessary to control the population growth rate. Even with one booster treatment of GonaCon-Equine, it is expected that most, if not all, mares would eventually return to fertility at some point, although the average duration of effect after booster doses has not yet been quantified. It is unknown what would be the expected rate for the return to fertility rate in mares boosted more than once with GonaCon-Equine. Once the herd size in the project area is at AML and population growth seems to be stabilized, BLM would make a determination as to the required frequency of new mare treatments and mare re-treatments with GonaCon or other fertility control methods, to maintain the number of horses within AML.

IUDs

IUDs are considered a temporary fertility control method that does not generally cause future sterility (Daels and Hughes 1995). It is expected that IUDs would only be inserted in non-pregnant (open) mares. Wild mares receiving IUDs would be checked for pregnancy by a veterinarian prior to insertion of an IUD. When wild horses are gathered, the majority are pregnant, but a fraction is not. Candidate mares for treatment would need to be screened by a veterinarian to ensure they are not pregnant, because any transcervical procedures can cause a pregnancy to terminate. Screening could be with transrectal palpation or ultrasonography. Those screening procedures require restraint and evacuation of the colon, but do not require sedation or analgesia. For palpation, the veterinarian uses a sleeved hand in the rectim to feel for a fetus in the uterus. For ultrasound screening, the veterinarian brings the unltrasound probe (transducer) with a sleeved hand into the mare's rectum, and visualizes the uterus. If palpation or ultrasound indicate that the mare is pregnant, then she is not considered for IUD application.

Based on promising results from studies in domestic mares, BLM has begun to use IUDs to control fertility as a wild horse and burro fertility control method on the range. The initial management use was in mares from the Swasey HMA, in Utah. The BLM has supported and

continues to support research into the development and testing of effective and safe IUDs for use in wild horse mares (Baldrighi et al. 2017, Holyoak et al. 2021). However, existing literature on the use of IUDs in horses allows for inferences about expected effects of any management alternatives that might include use of IUDs, and support the apparent safety and efficacy of some types of IUDs for use in horses (see Appendix D).

Soft IUDs may cause relatively less discomfort than hard IUDs (Daels and Hughes 1995). The 2013 National Academies of Sciences (NAS) report considered IUDs, and suggested that research should test whether IUDs cause uterine inflammation, and should also test how well IUDs stay in mares that live and breed with fertile stallions. Since that report, researchers tested a Y-shaped IUD to determine retention rates and assess effects on uterine health; retention rates were greater than 75% for an 18-month period, and mares returned to good uterine health and reproductive capacity after removal of the IUDs (Holyoak et al. 2021). Also, the University of Massachusetts has developed a magnetic IUD that has been effective at preventing estrus in non-breeding domestic mares (Gradil et al. 2019, Joonè et al. 2021, Gradil et al. 2021). The overall results are consistent with results from an earlier study (Daels and Hughes 1995), which used O-shaped silicone IUDs.

Minimally invasive Mare Sterilization Procedures

Population growth suppression becomes less expensive if fertility control is long-lasting (Hobbs et al. 2000), such as with spaying and neutering. For the purposes of this EA, 'minimally invasive sterilization' is defined to be the minimally invasive sterilization of a female horse (mare) by physical means. The physical means considered here include forms of oviduct blockage; for the purposes of this analysis, these are considered minimally invasive insofar as no incisions are required. Unlike in dog and cat spaying, these minimally invasive forms of mare sterilization do not entail removal of the ovaries or uterus. Only healthy mares in BCS score of 3 or greater would be considered.

The specific minimally invasive sterilization procedures could include any form of procedure that leads a mare to be unable to become pregnant, or to maintain a pregnancy, but that does not entail incision by scalpel. The two transcervical procesures analyzed below are physical, minimally invasive sterilization methods that cause long-term blockage of the oviduct, so that fertile eggs cannot go from the ovaries to the uterus. A detailed analysis of those methods and their expected effects is included in Appendix D.

As is the case for IUDs, candidate mares for minimally-invasive sterilization procedure treatment would need to be screened by a veterinarian to ensure they are not pregnant, because any transcervical procedures can cause a pregnancy to terminate. If palpation or ultrasound indicate that the mare is pregnant, then she is not considered for the minimally invasive sterilization procedure.

One form of minimally invasive oviduct blockage procedure, "endoscopic oviduct ablation," infuses medical-grade N-butyl cyanoacrylate glue into the oviduct (Bigolin et al. 2009). In the procedure, the veterinarian passes an endoscope through the cervix, to visualize the interior of the uterus. Treated mares would stand in a padded, hydraulic chute. Banamine may be administered intravenously prior to the procedure to minimize transient colic (abdominal

cramping) following the procedure. Ketamine may be added on an as needed basis for additional standing chemical restraint. Fecal material is removed from the rectum, the tail is wrapped and suspended, the perineal and vaginal areas are cleansed. A sterilized, flexible endoscope would be placed into the vaginal vault and advanced through the cervix in an atraumatic manner. A veterinary team is required to manipulate and operate the endoscope monitor, insert and hold the endoscope, manipulate and position the fine-tipped catheter into the oviduct, and infuse the fluid into the oviduct. The uterus would be partially inflated with filtered room air to visualize the oviduct papilla located at the proximal end of the uterine horn. A sterile catheter is guided to each uterotubal junction (which is the entrance to the oviduct), and medical-grade glue (N-butyl cyanoacrylate) is introduced to the oviduct, where it causes blockage. After the procedure, the uterus could be infused with an antibiotic and saline to minimize the potential for infection secondary to any unintended bacterial contamination. The mares are monitored initially for 10 minutes, and observed by a veterinarian twice per day for 10-14 days, but no further pain management is expected to be needed. Any mare showing signs of postoperative complications would receive treatment as indicated by a veterinarian. The total duration of the procedure per mare is expected to be less than 30 minutes. A pilot project used this approach in six domestic mares and has shown that after three years of breeding by a fertile stallion, all six mares remained infertile (Dr. I. Liu, UC Davis Emeritus Professor, personal communication to BLM). After receiving support from the California legislature (AWHC 2019), the method was successfully used on more equines in 2020 at UC Davis (Dr. E. Davis, UC Davis, personal communication to BLM).

Another form of minimally invasive oviduct blockage procedure, "endoscopic laser ablation of the oviduct papilla," is similar to the procedure described above, except that the oviducts are blocked via heating from a laser to ablate the oviduct papilla. The diode laser is expected to immediately "seal" the oviduct opening and the resulting inflammatory reaction is expected to result in additional scar tissue formation, forming a barrier to the passage of eggs from the ovary to the uterus. Local anesthesia could be dripped directly onto each oviduct papilla to minimize any discomfort. This method has been used successfully in Georgia (unpublished results) and California (unpublished results).

Neither of these minimally invasive procedures damages the ovaries. The mare would be sterile, although she would continue to have estrus cycles. Because of the retention of estrus cycles, it is expected that behavioral outcomes of either method would be similar to those observed for PZP vaccine treated mares. Namely, mares would continue with hormonal cycles and associated breeding behaviors during the typical breeding season.

If the minimally invasive sterilization techniques are either of the two noted above, then mares chosen for the minimally invasive sterilization procedure could include adult females and immature females estimated to be older than 8 months. Immature females could be included because there are no concerns regarding space for instruments, as an endoscope and associated instruments used along with the endoscope are the only tools used, and only open (non-pregnant) females would receive the procedure.

Sex Ratio Adjustment

Sex ratio adjustment, leading to a reduced fraction of mares in the herd, can be considered a form

of contraceptive management, insofar as it can reduce the realized per-capita growth rate in a herd. By reducing the proportion of breeding females in a population (as a fraction of the total number of animals present), the technique leads to fewer foals being born, relative to the total herd size. Sex ratio is typically adjusted in such a way that 60 percent of the horses are male. As new foals are born into the herd, the ratio tends to become closer to a 50-50 ratio. In the absence of other fertility control treatments, a 60:40 sex ratio alone can temporarily reduce population growth rates from approximately 20% to approximately 15% (Bartholow 2004). While such a decrease in growth rate may not appear to be large or long-lasting, the net result can be that fewer foals being born, at least for a few years – this can extend the time between gathers, and reduce impacts on-range, and costs off-range. A more complete analysis of sex ratio adjustment is in Appendix D.

Alternative B

Alternative B is similar to Alternative A, except that no mares returned to the range would have a minimally invasive sterilization procedure or receive IUDs. Up to approximately ¼ of all horses on the range at low AML (i.e., about 33) may be geldings, and the wild horse herd could have up to 60% males overall at times. Because the fertility control vaccines used are potentially reversible, all of the horses on the range would be potentially fertile, after vaccine effects wear off. Even while vaccines are effective, it is not expected that the BLM would be able to capture and treat all the mares in the herd, such that it is expected that some potentially large fraction (i.e., ½ or more, depending on gather efficiencies) of the mares at any given time would be fertile. Up to ¼ of the males at low AML (i.e., about 33) could be geldings. This is expected to slow population growth rates, partly as a result of the larger number of males than females in the horse herd, and partly because geldings that retain harems do appear to prevent fertile stallions from breeding with females, at least for some number of years after gelding (USGS, unpublished data). Fertile studs would be selected to maintain a diverse age structure, herd characteristics and body type (conformation).

Gelding

In order to reduce the total number of excess wild horses that would otherwise be permanently removed from the HMA, a portion of the horse population would be managed as geldings (castrated males). The procedures to be followed for gelding of stallions are detailed in the Gelding Standard Operating Procedures (SOPs) in Appendix I. Chemical vasectomy was identified as a promising method in the 2013 NAS report, but chemical vasectomy has since been identified as an unsuccessful method in horses (Scully 2015); the method is, therefore, not being considered for use under these alternatives. Gelded animals would be monitored periodically after release. This monitoring would be completed either through aerial reconnaissance, if available, or through ground-based observations from major roads and trails. It is not anticipated that all the geldings would be observed but monitoring may detect complications if they are occurring, and could confirm that horses are freely moving about the HMA. Once released, preliminary results from Conger HMA indicate that geldings would continue to move and behave like fertile stallions, at least for the initial year or two after treatment (USGS, unpblished data). Periodic but informal observations of geldings could be recorded during routine resource monitoring work, but such observations are not intended to be part of any structured research project. Such incidental observations could include but not be limited to band size, social

interactions with other geldings and harem bands, distribution within their habitat, forage utilization and activities around key water sources.

Alternative C

Under this alternative no population growth suppression methods would be utilized for animals remaing on the range. A gate cut removal would be implemented rather than a selective removal and implementing fertility control measures. The post-gather sex ratio would be about 50:50 mares to studs, or would slightly favor males. This would be expected to result in fewer and smaller bachelor bands, increased female reproduction on a proportional basis within the herd, larger band sizes, and individual mares may begin actively producing at a slightly older age.

Alternative D

Under the No Action Alternative, there would be no active management to control the population size within the established AML at this time. In the absence of a gather, wild horse population would continue to grow at an average rate of approximately 20% per year. Without a gather and removal now, the wild horse population may grow to approximately 1,700 in four years time based on the average annual growth rate.

Use by wild horses would continue to exceed the amount of forage available for their use. Competition between wildlife and wild horses for limited forage and water resources would continue. Damage to rangeland resources would continue or increase. Over time, the potential risks to the health of individual horses would increase, and the need for emergency removals to prevent their death from starvation or thirst would also increase. Over the long-term, the health and sustainability of the wild horse population is dependent upon achieving a thriving natural ecological balance and sustaining healthy rangelands. Allowing wild horses to die of dehydration or starvation would be inhumane and would be contrary to the WFRHBA which requires that excess wild horses be immediately removed. Allowing rangeland damage to continue to result from wild horse overpopulation would also be contrary to the WFRHBA which requires the BLM to “protect the range from the deterioration associated with overpopulation”, “remove excess animals from the range so as to achieve appropriate management levels”, and “to preserve and maintain a thriving natural ecological balance and multiple-use relationship in that area.”

3.3.9 Wildlife

Terrestrial wildlife resources in the gather area are typical of the Northern Great Basin and the variety of habitat types within the gather area include Inter mountain Cold Desert Scrub, Sagebrush, Aspen Woodlands, Intermountain Rivers & Streams, and Springs & Springbrooks (see Special Status Species Section 3.3.6). Common wildlife species include coyote, black-tail jackrabbit, desert cottontail, bobcat, and numerous raptors, reptiles, and other small mammal species (See Appendix H for list of knonwn or potential species that may occur within the project area). Mule deer, Big Horn Sheep, and pronghorn antelope are big game species present in the area.

<u>Mule Deer</u>

The gather area contains approximately 60,000 acres of mule deer habitat. Deer are generally classified as browsers, with shrubs and forbs making up the bulk of their annual diet. The diet of mule deer is quite varied; however, the importance of various classes of forage plants varies by season. In winter, especially when grasses and forbs are covered with snow, their entire diet may consist of shrubby species. Wild horses have little dietary overlap with mule deer. Wild horses almost exclusively graze while mule deer mostly browse; however, forage competition can occur when desirable grass forage for wild horses becomes limited due to degraded range conditions, drought, or overuse and they must subsist on a diet of forbs and shrubs. Competition between wild horses and mule deer exists primarily at water sources.

Pronghorn Antelope

The gather area contains approximately 478,000 acres of pronghorn antelope habitat. Pronghorn use open country with few trees and short shrubs. Antelope diets consist of forbs and grasses during the spring and early summer and shrub browse the remainder of the year. Wet meadows associated with spring meadows provide succulent green forage during hot dry summer months. These are the habitats that wild horses also prefer during this period of the year. Heavy wild horse utilization of spring meadows removes the succulent forage that antelope depend on during the hot summer months as well as causing degradation of these important habitats.

Bighorn Sheep

Bighorn sheep are an uncommon resident in the mountainous portions of the HMA. Nevada Department of Wildlife (NDOW) estimates that about 85,000 acres of occupied bighorn habitat occurs in the Jackson Mountains. Topography is the primary source of cover for bighorns. Steep broken escarpments (60% plus slope) or rock outcrops at least five acres in size with accessible terraces is optimum. Bighorn sheep are adaptable foragers but three characteristics are common to quality forage: abundance, continuous distribution, and low stature. Grasses have high importance in bighorn sheep diets, but forbs and shrubs are also important. Desirable bighorn habitat consists of sagebrush/bunchgrass communities, wet meadows, and riparian areas adjacent to rock outcrops and rimrock.

Environmental Affects

Alternatives A-C

In addition to impacts previously analyzed for Migratory Bird (Section 3.2.3), T & E Species (Section 3.2.5), and SSS (Section 3.3.6), impacts would consist primarily of disturbance and displacement to wildlife by the low-flying helicopter, running horses and construction of temporary trap/holding facilities. Typically, the natural survival instinct of wildlife to this type of disturbance is to flee from the perceived danger. These impacts would be minimal, temporary, and of short duration. There is a slight possibility that non-mobile or site-specific animals would be trampled.

Impacts would be related to WHB densities. Managing WHB population with AML range would decrease competition for available cover, space, forage, and water between WHB and other wildlife. Reduced harvest of vegetation would result in increased plant vigor, production, seedling establishment, and ecological health of important wildlife habitat. Resident populations of mule deer, big horn sheep, and pronghorn antelope would benefit from an increase in forage availability, vegetation density, and structure.

Alternative D
Maintaining the current excess WHB numbers within the Complex, augmented by yearly population growth, would result in continued impacts to wildlife populations and habitats. WHB populations are expected to increase every year gather activities are postponed. Upland habitats would continue to see WHB utilization and the associated decrease in herbaceous vegetation would reduce wildlife forage availability and quality. Wildlife habitat would also continue to be impacted by the physical action of horse movement. Continued heavy grazing or trampling would occur on spring meadow systems. The result would be to decrease water availability, leading to increased competition for this critical resource. Habitats associated with wetland and riparian areas would remain degraded due to removal of residual stubble height and compaction, leading to increased disturbance and levels of bare ground. Based on spring inventory assessments, increasing wild horse populations would continue to concentrate and trample riparian areas, thereby degrading riparian habitats and the important functions these sites represent for many wildlife species.

Chapter 4 Cumulative Impacts

The NEPA regulations define cumulative impacts as impacts on the environment that result from the incremental impact of the Proposed Action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions (40 CFR 1508.7). Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

The Cumulative Assessment Area (CAA) for the purpose of this analysis is the Jackson Mountains gather area. Refer to Map 1

4.1 Past and Present Actions

Wild/Feral Horses
In 1971 Congress passed the Wild Free-Roaming Horses and Burros Act which placed wild and free-roaming horses and burros, that were not claimed for individual ownership, under the protection of the Secretaries of Interior and Agriculture. In 1976 the Federal Land Policy and Management Act (FLPMA) gave the Secretary the authority to use motorized equipment in the capture of wild free-roaming horses as well as continued authority to inventory the public lands. In 1978, the Public Range Improvement Act (PRIA) was passed which amended the WFRHBA to provide additional directives for BLM's management of wild free-roaming horses on public lands.

The Paradise-Denio MFP designated the Jackson Mountain HMA for the long-term management of wild horses. The HMA established in 1982 has changed in size and shape from the original Herd Area (HA) representing where wild horses were located in 1971, to remove the Desert Valley Allotment. Currently, management of the HMA and its wild horse population is guided by the WDO RMP (2015) and the BRHR RMP (2004) and associated FMUDs. The AML range for the Jackson Mountain HMA is 130-217 wild horses. The Land Use Plan analyzed impacts of management's direction for grazing and wild horses, as updated through Bureau policies, Rangeland Program direction, and Wild Horse Program direction. Forage was allocated within

the allotments for livestock use and range monitoring studies were initiated to determine if allotment objectives were being achieved, or that progress toward the allotment objectives was being made.

The actions which have influenced the wild horse populations in existence today are primarily wild horse gathers, which resulted in the capture and removal of some 3,436 wild horses and release of 415 horses back into Jackson Mountains HMA.

Vegetation, Riparian and Water Resources

Forage utilization during the 1900's was high when thousands of cattle, sheep, and horses grazed lands in northern Nevada. In the 1930s when overgrazing threatened to reduce Western rangelands to a dust bowl, Congress approved the Taylor Grazing Act (TGA) of 1934, which for the first time regulated grazing on public lands. The TGA required ranchers who grazed horses or livestock on public lands to have a permit and to pay a grazing fee, but by that time, thousands of horses roamed the Nevada desert unbranded and unclaimed.

Prior to the TGA, livestock grazing practices resulted in significant impacts to soil resources. The soil tolerance was exceeded and the soil medium for plant growth was not maintained. As a result, historic livestock grazing activities prior to the TGA had significant impacts on the vegetation resources within the impact assessment area by eliminating or greatly reducing the primary understory plants. Cheat grass was introduced into the area in the early 1900s.

Prior to the TGA, livestock grazing practices also significantly impacted wetland and riparian zones. Wetland and riparian zones declined, riparian vegetation was insufficient to dissipate energy or to filter sediments, thereby increasing erosion and destabilizing stream banks and meadows. Destabilization of streams and meadows led to incised channels and gullies resulting in lowered water table. In an effort to prevent adverse impacts to rangeland health and to support and better distribute livestock on the public range, a variety of range improvement projects have been implemented through the years dating back to the 1930s.

A series of livestock grazing decisions since the TGA have resulted in reductions in livestock numbers and changes in seasons of use and in grazing management practices to promote rangeland health within grazing allotments. Through various grazing decisions, the current level of permitted livestock grazing use has been reduced to less than half (48%) of the level of grazing permitted in 1982. Refer to Table 5, Section 3.3.3 above. Other management changes have also resulted in restrictions on when, where and how long livestock can graze, to minimize potential impacts to rangeland health.

While the present livestock grazing system and efforts to manage the wild horse population within AML has helped reduce past historic soil impacts and has improved current soil resource conditions, the current overpopulation of wild horses is resulting in areas of heavy vegetative utilization, trailing and trampling damage, and prevents BLM from managing public lands within the HMA for rangeland health and for a thriving natural ecological balance.

4.2 Reasonably Foreseeable Future Actions

Wild Horses

Wild horse population is expected to continue to grow and increase at a rate of 15-20% annually. If necessary BLM would provide water for wild horses until wild horse populations are within AML or in periods of critical need.

Vegetation, Riparian and Water Resources

Livestock grazing is expected to continue at similar stocking rates. Under current livestock stocking rates, objective pertaining to rangeland health can continue to be met with proper livestock management. Given that wild horse and burro population numbers will continue to grow, upland and riparian recourse degradation can be anticipate. Degradation and resource impacts from excess wild horse and burros will negatively impact all users, such as wildlife, and prevent the BLM from maintaining or improving rangeland health, and achieving a thriving natural ecological balance.

Impacts from Action Alternatives A-C

Reasonably foreseeable effects expected when any of the action alternatives would include continued improvement of upland and riparian vegetation conditions, which would in turn benefit permitted livestock, native wildlife, and wild horses populations as forage (habitat) quantity and quality is improved over the current level. Benefits from reduced wild populations would include fewer animals competing for limited water quantity and at limited sites. Ultimately there should be more stable wild horse populations, healthier rangelands, healthier wild horses, and fewer multiple use conflicts within the cumulative area over the short and long-term.

Over the next 10-20 year period, continuing to manage wild horses within the established AML range would result in improved vegetation condition (i.e. forage availability and quantity), which in turn would result in improved vegetation density, cover, vigor, seed production, seedling establishment and forage production over current conditions. Managing wild horse populations within the established AML would allow the primary forage plant species to return more rapidly and allow for improvements to riparian habitat, even though some vegetation conditions may never be able to return to their potential. Maintaining AML over a sustained period of time throughout the CAA would allow for the collection of scientific data to evaluate whether changes to AML levels are warranted or necessary.

Cumulatively over the next 10-20 years, achieving AML and lowering the population growth rate would result in fewer gathers and less disturbance to individual wild horses and the herd's social structure. Individual and herd health would be maintained.

By bringing the wild horse populations to AML, it would be possible to gather a higher percentage of the total population in future gathers, which would allow the increased use of fertility control and sex ratio adjustments as methods to slow population growth. However, releasing gathered wild horses back into the HMA (following application of population control methods) may lead to the decreased ability to gather horses in the future as released horses learn to evade the helicopter.

Alternative D. No Action: Defer Gather & Removal

Under the No Action alternative, AML would not be achieved within the HMA and excess wild horses would not be removed from areas within or outside of the designated HMA. There would be no active management to control the size of the population at this time. Wild horse populations would continue to increase at an average rate of 20-27% per year. Without a gather and removal now, the wild horse population in the Jackson Mountains HMA would exceed 2,000 horses within 5 years and 6,000 horses within 10 years based on population annual reproduction rate estimates. These population levels would continue to exceed the carrying capacity of the range.

AML is the maximum population at which a thriving natural ecological balance would be maintained and that avoids deterioration of the rangeland. The increasing population of wild horses even further in excess of AML under the No Action alternative would over-extend and deplete water and forage resources. Excessive utilization, trampling, and trailing by wild horses would further degrade the vegetation, prevent improvement of range that is already in less than desirable or in degraded condition, would degrade currently healthy rangelands, and would not allow for sufficient availability of forage and water for wild horses or other ungulates, especially during drought years or severe winter conditions.

Throughout the HMAs administered by the Winnemucca District, few predators exist to control wild horse or burro populations. Some mountain lion predation occurs, but does not appear to be substantial. Coyote are not prone to prey on wild horses unless such horses are young or extremely weak. Other predators such as wolf or bear do not exist at detectable numbers in the HMA.

Wild horses are a long-lived species with documented foal survival rates that can exceed 95% (Ransom et al. 2016). Survival rates collected through research efforts and included in the WinEquus model are as follows:

- Pryor Mountain Wild Horse Range, Montana: >95%; 15 years and younger, except for foals, both sexes: 93%;
- Granite Range HMA, Nevada: >95%; 15 years and younger, except for male foals: 92%;
- Garfield Flat HMA, Nevada: > 95%; 24 years and younger, except both foals, both sexes: 92%.

Wild horses are not a 'self-regulating' species (NAS 2013) and would continue to reproduce until their habitat can no longer support them. Usually the habitat is severely, if not irreversibly, damaged before the wild horse population is abruptly impacted and experiences substantial death loss. Once the vegetative and water resources are at these critically low levels due to excessive utilization by an over population of wild horses, the weaker animals, generally the older animals and the mares and foals, are the first to be impacted. It is likely that a majority of these animals would die from starvation and dehydration. The resultant population would be heavily skewed towards the stronger stallions which would lead to substantial social disruption in the HMA. Fighting among stud horses would increase as they protect their position at scarce water sources, and injuries and death to all age classes of animals would be anticipated. Substantial loss of the wild horses in the HMA due to starvation or lack of water would have obvious consequences to the long-term viability of the herd. By mismanaging the public lands in this way, the vegetative and water resources would be impacted first and to the point that they have no potential for

recovery. This degree of resource impact would lead future wild horse herds to persist only at a greatly reduced level if BLM is able to manage for wild horses at all on the HMA in the future.

Trampling and trailing damage by wild horses in/around riparian areas would also be expected to increase, resulting in larger, more extensive areas of bare ground. Continued decline of rangeland health and irreparable damage to vegetative, soil and riparian resources, would have obvious impacts to the future of the HMA and all other users of the range's resources. Competition for the available water and forage between wild horses, domestic livestock, and native wildlife would increase. Continued decline of rangeland health and irreparable damage to vegetative, soil and riparian resources, would have obvious impacts to the future of the HMA and all other users of the resources, which depend upon them for survival. As a result, the No Action Alternative would not ensure healthy rangelands that would allow for the management of a healthy wild horse population, and would not promote a thriving natural ecological balance.

As populations increase beyond the capacity of the habitat to sustain them, more bands of horses would leave the boundaries of the HMA in search of forage and water. This alternative would also result in increasing numbers of wild horses in areas not designated for their use, and would not achieve the stated objectives for wild horse herd management areas, to "prevent the range from deterioration associated with overpopulation", and "preserve and maintain a thriving natural ecological balance and multiple use relationship in that area".

Regulations at Title 43 CFR § 4700.0-6 (a) state "*Wild horses shall be managed as self- sustaining populations of healthy animals in balance with other uses and the productive capacity of their habitat"* (emphasis added). Allowing excess wild horses to remain ungathered would be inconsistent with the mandates of the WFRHBA and implementing regulations.

5.0 Chapter 5 MONITORING and MITIGATION MEASURES

Monitoring
The BLM Contracting Officer Representative (COR) and Project Inspectors (PIs) assigned to the gather(s) would be responsible for ensuring contract personnel abide by contract specifications and SOPs. Ongoing rangeland, riparian, and wild horse monitoring would continue, including periodic aerial population counts.

Under Action Alternatives A-C:

- Fertility control monitoring of treated mares would be conducted in accordance with the CAWP outlined in Appendix A;
- Genetic monitoring would take place through analysis of hair follicle samples;
- Rangeland health monitoring would continue;
- Routine monitoring of wild horse herd health would continue;
- Aerial surveys to estimate herd size would continue;
- Monitoring of fertility control treated wild horse mares may be facilitated by GPS radio collars, or GPS tail tags on either sex of horses.

5.1 Socioeconomics

The Socioeconomics is considered to be the value placed on the Jackson Mountains wild horses that may be contributed to economies. At this time there are no registered guided tours or known sales of commercial pictures being sold to increase the value to the communities from the wild horses that reside within or outside the Jackson Mountains HMA. It is acknowledged that some people that drive through the general area may stop and view or photograph the horses, and BLM may not be fully aware of the magnitude of socioeconomic impacts from those activities.

There can also be a negative impact on socioeconomics due to the overpopulation of wild horses. This coming from impacts to wildlife enthusiasts that hunt, photograph, and guide big game, that have since left the area or are in poor condition due to the overpopulation of wild horses. Although grazing permits have not been recently reduced as a direct result of the overpopulation of wild horses, the resource degradation caused by excess horses on the land as well as impacts from recent drought have cumulatively put a strain on many agricultural related businesses in the area.

It is not possible to quantify the revenue or losses attributable to the Jackson Mountains wild horses. It is recognized that for local industries the excess wild horses cause a negative impact to resources and to many businesses that rely on healthy range conditions, and healthy wildlife in the area. It is also recognized that any revenue brought by tourism, and photography of wild horses in the HMA is unknown.

Chapter 6 List of Preparers

Table 6.1 List of BLM Preparers

The following list identifies the interdisciplinary team member's areas of responsibility.

Garrett Swisher	Project Lead, Wild Horses and Burros, overall document preparation
Dane Silva	Cultural Resources, Paleontological Resources
Shannon Deep	Native American Religious Concerns
Kathy Torrence	Wilderness, Wilderness Study Areas, Lands with Wilderness Characteristics
Brian McMillan	Invasive Non-native Species, Vegetation, Threatened and Endangered Species, Special Status Species, General Wildlife, Fisheries, Wetlands and Riparian Zones, Soils
Robin Michel	National Environmental Policy Act Compliance
Angie Arbonies	Rangeland Management
Kyle Osborne	Recreation
Mike Garner	GIS
Mitchell Vorwerk	Hydrology